Overland Storage

NEO® 100s Library

User Guide

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Preface

Audience and Purpose

This guide is intended for system and network administrators charged with installing and maintaining Overland Storage® NEO 100s libraries on their network. It provides information on the installation, configuration, security, and maintenance of those libraries.

It assumes you are familiar with basic functions of your computer, Serial Attached SCSI (SAS), and Fibre Channel (FC), as well as networking concepts and terminology. It also assumes you are knowledgeable about the Storage Area Network (SAN) to which your NEO S-series library is being connected.

This product is not intended to be connected directly or indirectly, by any means whatsoever, to interfaces of public telecommunications networks.

Product Documentation

NEO product documentation and additional literature are available online. Point your browser to:

http://docs.overlandstorage.com/neo

For additional assistance, search at http://support.overlandstorage.com.

Overland Technical Support

For help configuring and using your NEO 100s libraries, search at:

http://support.overlandstorage.com/kb

You can email our technical support staff at techsupport@overlandstorage.com or get additional technical support information on the Contact Us web page:

http://docs.overlandstorage.com/support

For a complete list of support times depending on the type of coverage, visit our website at:

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Conventions

This document exercises several alerts and typographical conventions.

Alerts

Convention	Description & Usage
IMPORTANT	An *Important* note is a type of note that provides information essential to the completion of a task or that can impact the product and its function.
CAUTION	A *Caution* contains information that the user needs to know to avoid damaging or permanently deleting data or causing physical damage to the hardware or system.
WARNING	A *Warning* contains information concerning personal safety. Failure to follow directions in the warning could result in bodily harm or death.
ADVERTISSEMENT	Un Canadien avertissement comme celui-ci contient des informations relatives à la sécurité personnelle. Ignorer les instructions dans l'avertissement peut entraîner des lésions corporelles ou la mort.

Typographical Conventions

Convention	Description & Usage
Button_name	Words in this special boldface font indicate command buttons found in the **Web User Interface**.
Ctrl-Alt-r	This type of format details the keys you press simultaneously. In this example, hold down the **Ctrl** and **Alt** keys and press the **r** key.
NOTE	A Note indicates neutral or positive information that emphasizes or supplements important points of the main text. A note supplies information that may apply only in special cases, for example, memory limitations or details that apply to specific program versions.
Menu Flow Indicator (**>**)	Words with a greater than sign between them indicate the flow of actions to accomplish a task. For example, **Setup > Passwords > User** indicates that you should press the **Setup** button, then the **Password** button, and finally the **User** button to accomplish a task.
Courier Italic	A variable for which you must substitute a value
`Courier Bold`	Commands you enter in a command-line interface (CLI)

Information contained in this guide has been reviewed for accuracy, but not for product warranty because of the various environments, operating systems, or settings involved. Information and specifications may change without notice.

Software Updates

The latest release of the NEO 100s firmware can be obtained from the Downloads and Resources – NEO Series page at the Overland Storage website:

http://docs.overlandstorage.com/neo

Follow the appropriate instructions to download the **latest** software file.

For additional assistance, search at http://support.overlandstorage.com/

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Finding More Information

Product documentation related to NEO 100s is listed below. The current versions of all these documents are always available from the Overland Storage NEO Download and Resources website (http://docs.overlandstorage.com/neo).

Source	Location	Content
Quick Start Guide	Product Packaging and Web	Provides complete instructions for installing the server into a rack and connecting the server to the network. Also contains links to warranty registration and information.
User Guide	eDoc on Web	Provides an overview of the configuration, maintenance, and troubleshooting of the NEO 100s, and detailed instructions on using the remote access Web User Interface.
Online Help	Web User Interface	Basic troubleshooting information embedded in the firmware.

Electrostatic Discharge Information

A discharge of static electricity can damage static-sensitive devices. Proper packaging and grounding techniques are necessary precautions to prevent damage. To prevent electrostatic damage, observe the following precautions:

- Transport products in static-safe containers such as conductive tubes, bags, or boxes.
- Cover the appliance with approved static-dissipating material.
- Use a wrist strap connected to the work surface and properly-grounded tools and equipment.
- Keep the work area free of non-conductive materials such as foam packing materials.
- Make sure you are always properly grounded when touching a static-sensitive component or assembly. Avoid touching pins, leads, or circuitry.

Safety and Environmental Notices

The sections that follow define each type of safety notice and give examples.

Laser Safety and Compliance

Before using the library, review the following laser safety information.

Class I Laser Product

The library may contain a laser assembly that complies with the performance standards set by the U.S. Food and Drug Administration for a Class I laser product. Class I laser products do not emit hazardous laser radiation. The library has the necessary protective housing and scanning safeguards to ensure that laser radiation is inaccessible during operation or is within Class I limits. External safety agencies have reviewed the library and have obtained approvals to the latest standards as they apply.

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Cautions and Regulatory Compliance Statements for NEBS

This library is NEBS certified. This section includes the cautions and regulatory compliance statements for the Network Equipment-Building System (NEBS) certification from the Telcordia Electromagnetic Compatibility and Electrical Safety – Generic Criteria for Network Telecommunications Equipment (A Module of LSSGR, FR-64; TSGR, FR-440; and NEBSFR, FR-2063) Telcordia Technologies Generic Requirements, GR-1089-CORE, Issue 4, June 2006.

NEBS Compliance Statements

CAUTION: To comply with the Telcordia GR-1089-CORE standard for electromagnetic compatibility and safety, for Ethernet RJ-45 ports, use only shielded Ethernet cables that are grounded on both ends. In a NEBS installation, all Ethernet ports are limited to intra-building wiring.

CAUTION: The intra-building ports of the equipment or subassembly are only suitable for connection to intra-building or unexposed wiring or cabling. The intra-building ports of the equipment or subassembly MUST NOT be metallically connected to interfaces that connect to the Open Settlement Protocol (OSP) or its wiring. These interfaces are designed for use only as intra-building interfaces (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4), and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

An external Surge Protective Device (SPD) is not required for operating this library.

Product Recycling and Disposal

This unit contains recyclable materials.

This unit must be recycled or discarded according to applicable local and national regulations. Overland Storage encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed.

This paragraph is also translated into Spanish (Español) as follows:

Esta unidad debe reciclarse o desecharse de acuerdo con lo establecido en la normativa nacional o local aplicable. Overland Storage recomienda a los propietarios de equipos de tecnología de la información (TI) que reciclen responsablemente sus equipos cuando éstos ya no les sean útiles.

Notice: This mark applies only to countries within the European Union (EU) and Norway.

Appliances are labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

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Remarque: Cette marque s'applique uniquement aux pays de l'Union Européenne et à la Norvège.

L'etiquette du système respecte la Directive européenne 2002/96/EC en matière de Déchets des Equipements Electriques et Electroniques (DEEE), qui détermine les dispositions de retour et de recyclage applicables aux systèmes utilisés à travers l'Union européenne. Conformément à la directive, ladite étiquette précise que le produit sur lequel elle est apposée ne doit pas être jeté mais être récupéré en fin de vie.

注意：このマークは EU 諸国およびノルウェーにおいてのみ適用されます。

この機器には、EU 諸国に対する廃電気電子機器指令 2002/96/EC(WEEE) のラベルが貼られています。この指令は、EU 諸国に適用する使用済み機器の回収とリサイクルの骨子を定めています。このラベルは、使用済みになった時に指令に従って適正な処理をする必要があることを知らせるために種々の製品に貼られています。

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local Overland representative.

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Product Description

The NEO 100s library provides compact, high-capacity, low-cost solutions for simple, unattended data backup and archive. The library has a compact 1U form factor with easy access to tape cartridges via a central removable magazine. The NEO 100s is a rack-mountable unit that incorporates an Ultrium 5 half-height or Ultrium 4 half-height tape drive. It is equipped with a SAS (Serial Attached SCSI) host adapter attachment that has a data transfer rate of up to 6.0 Gbps.

The NEO 100s has a removable cartridge magazine, providing a maximum of nine data cartridge positions, or a maximum of eight data cartridge positions with a configurable 1-slot Mail Slot. One position is reserved as the tape drive exchange position and can be accessed by the library only.

Topics in Product Description:

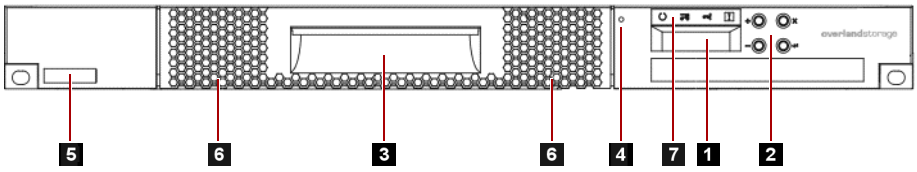
- Physical Library
- Networking
- Ultrium Tape Drives
- Media

Physical Library

These sections describe the physical aspects of the libraries.

Front Panel

These graphics and table illustrate the front panel components:



Number	Component	Description
1	Operator Control Panel (OCP)	The Operator Control Panel features a monochrome 16-character LCD graphic display located on the front of the library. Library operations and service functions are performed from this screen.The Web User Interface offers some of the same functionality as the Operator Control Panel using a web browser for remote access to the library. For more information on both these interfaces, see Chapter 2, "User Interfaces."

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Number	Component	Description
2	Control Key buttons	The Control Keys (buttons) are located to the right of the Operator Control Panel LCD display on the front of the library. • **UP** (+) — The upper left button is used to scroll upward through menu items. • **DOWN** (-) — The lower left button is used to scroll downward through menu items. • **CANCEL** (X) — The upper right button is used to cancel a user action and return to the previous menu screen. • **SELECT** (↵) — The lower right button is used to display a sub-menu or force an accessor action.
3	Cartridge magazine	The tape library has a single cartridge magazine that can hold up to 9 data cartridges (or 8 data cartridges with a one-slot Mail Slot). See "Cartridge Magazine" on page 1-3. Column 5/Tier 1 in the cartridge magazine can be configured as a one-slot Mail Slot. Column 5/Tier 2 in the cartridge magazine is reserved for the exchange position and can be accessed by the library only. The Mail Slot is used to import and export cartridges without interrupting normal library operation. Beginning with Column 4, a minimum of one column can be reserved for cleaning cartridges. Cleaning cartridges are used to clean the tape drive heads.
4	Cartridge magazine manual release	Emergency cartridge magazine lock release. When the Mail Slot is locked, insert a large, straightened paper clip twice or hold the paper clip in place while sliding the cartridge magazine past the Mail Slot lock.
5	Serial number label	The machine type and serial number of the library are located on the front bezel of the library.
6	Air vents	These vents help keep the library at a normal operating temperature.
7	Front panel LEDs (left to right)	• **Ready/Activity** (Green LED) — It is illuminated any time the unit is powered ON and able to function. It should blink whenever there is library or drive activity, or when the library is in the process of powering up. • **Clean Drive** (Amber LED) — It is illuminated when the drive needs to be cleaned. The LED will be turned OFF after the drive is cleaned successfully. • **Attention** (Amber LED) — It is illuminated when there has been a failure that indicates a piece of media is bad, marginal, or invalid. It will be cleared when all invalid cartridges have been exported from the library. The amber LED may also be lit because a power supply or a power supply fan is failing, or a drive sled is defective, missing, or has been replaced by a different drive type. • **Error** (Amber LED) — It is illuminated when there is an unrecoverable library or drive failure. A message is displayed at the same time on the Operator Control Panel display.

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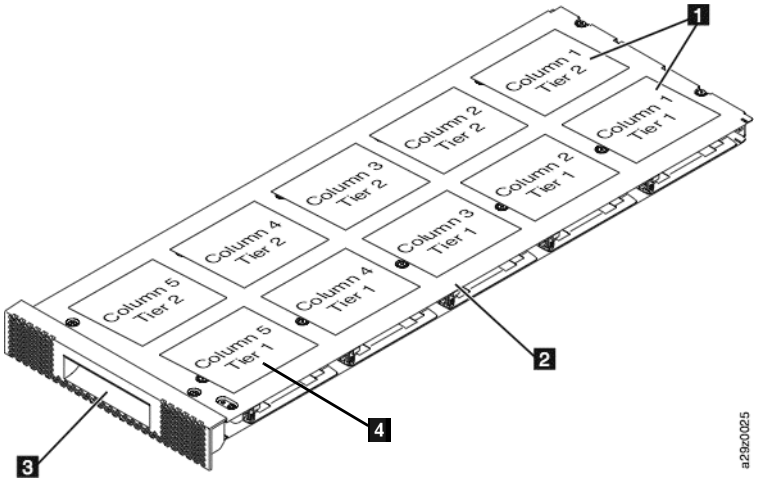
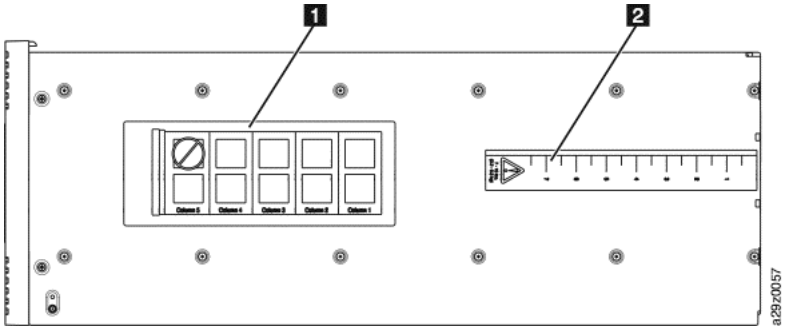
Cartridge Magazine

This graphic illustrates the tape cartridge magazine that goes down the center of the library.



Number	Description
1	Cartridge location references as they appear in the Library Map.
2	Cartridge magazine
3	Magazine handle
4	Configurable as Mail Slot

The following figure shows the cartridge location label (1) and ruler (2) that appear on the top of the cartridge magazine. The ruler provides an indication of the distance, when opening or withdrawing the magazine, to the end of the magazine before it clears the front edge of the library. To prevent dropping the magazine, support both ends of the magazine before it clears the front edge of the library.



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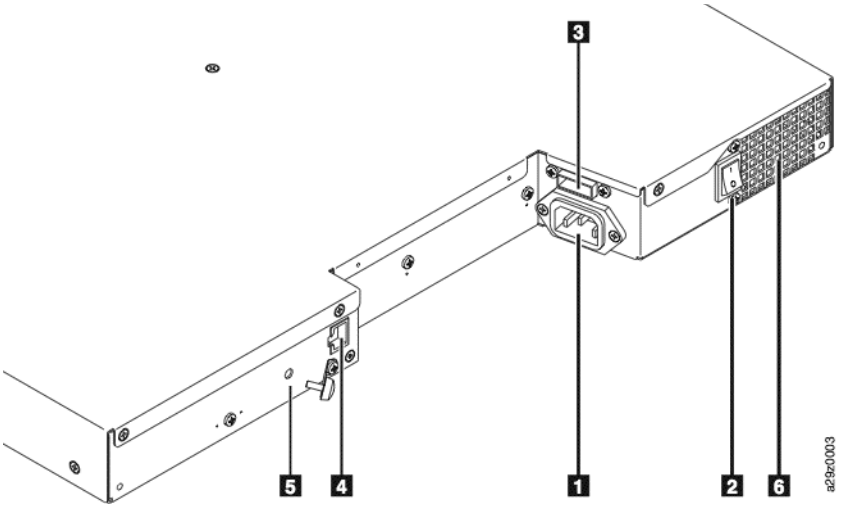
Rear Panel

This graphic illustrates rear panel components.



Number	Component	Description
1	Power connector	The library connects to a 110/220 volt AC power supply.
2	Power switch	The library is powered ON when the power supply switch on the rear panel is ON (|); the library has no independent power switch on the front panel. Move switch to OFF (O) to power it OFF.
3	SAS host interface connector	Serial-attached SCSI host interface cable connection. The SAS drives use the SFF-8088 connection at the drive end and SFF-8088 or SFF-8470 at the host adapter end.

4	Ethernet port	This port connects the library to a network.
		• 10/100 Link LED
		  • Description: Green; indicates link integrity
		  • Flashing: Network synchronization/negotiation
		  • Steady (On): Good connection
		  • Off: No connection between NIC and hub
		• Activity LED
		  • Description: Amber; indicates port traffic
		  • Flashing: Network traffic present
		  • Steady (On): Heavy network traffic
		  • Off: No traffic

5	Accessor locking screw	The Accessor locking screw is used to lock the accessor in place during transportation. **CAUTION:** To prevent damage to the library, remove the Accessor locking screw before powering ON.
6	Air vent	These vents allow hot air to escape from the power supply and tape drive sled.

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Bar Code Reader

The bar code reader is an integral part of the library accessor. The bar code reader reads each cartridge bar code label and uses the data to identify the types of cartridge magazines and tape drive installed in the library and provide inventory feedback to the host application, Operator Control Panel, and Web User Interface. The library stores the customized inventory data in memory. Library firmware supports a 6 or 8-character volume serial number (VOLSER) on the bar code label on the tape cartridge.

SAS Host Interface

The Ultrium 4 and Ultrium 5 Half-Height tape drives support the Serial Attached SCSI (SAS) interface. They have one Mini-SAS (SFF-8088) connector, and can be connected to a Mini-SAS (SFF-8088) or SAS (SFF-8470) at the host adapter end with the appropriate cable. The SFF-8088 SAS connectors on the Ultrium 4 are compatible with SAS-1 cables. The SFF-8088 SAS connector on the Ultrium 5 is compatible with SAS-1 or SAS-2 cables.

A drive with a SAS interface can be linked directly to controllers. SAS is a performance improvement over traditional SCSI because SAS enables multiple devices (up to 128) of different sizes and types to be connected simultaneously with thinner and longer cables; its full-duplex signal transmission supports 3.0 Gb/s or 6.0 Gb/s. In addition, the NEO 100s can be hot-plugged. SAS drives will auto-negotiate speed.

Networking

This section covers the network supported features and options.

Supported Internet Protocols

The NEO 100s supports the following Internet Protocols:

- IPv4
- IPv6

To learn more about IPv4, visit http://www.iana.org/. To learn more about IPv6, visit http://www.ipv6.org/.

Simple Network Management Protocol (SNMP) Messaging

Occasionally, the library may encounter a situation that you want to know about, such as an open magazine or a fault that causes the library to stop. The library provides a standard TCP/IP protocol called Simple Network Management Protocol (SNMP) to send alerts about conditions (such as need for operator intervention) over a TCP/IP LAN network to an SNMP monitoring station. These alerts are called SNMP traps. Using the information supplied in each SNMP trap, the monitoring station (together with customer-supplied software) can alert operations personnel of possible problems or operator interventions that occur.

SNMP Traps

SNMP traps are alerts or status messages that can be collected, monitored and used to proactively manage attached libraries using SNMP protocol with the SNMP monitoring stations. In summary, each trap provides the following information:

- **Product Identification** such as product name, description, manufacturer, model number, firmware level, and the URL for which the trap is designated.

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- **Product Status** such as the severity of the trap, status (current and previous), and the time the trap occurred.
- **Library State** (physical device status) such as identification and status of devices that are monitored. In the case of the library, it would include enclosure, power supply, controller, magazine status, drive count, cartridge slot count, and Mail Slot count. Also included would be certain library statistics, and where appropriate, the fault FSC (fault symptom code) including the severity and description of that fault.
- **Drive Status** such as the identification of each drive in the library, firmware level, serial number, and other address and status information.
- **Trap Definitions** such as library status change, open magazine, Mail Slot accessed, hard fault information, drive cleaning requests, excessive retries, and library returning to normal operations.
- **SNMP MIBs**: The library's Management Information Base (MIB) contains units of information that specifically describe an aspect of the system, such as the system name, hardware number, or communications configuration. Status and error data is also gathered by MIBs and sent to one or more IP addresses defined during the SNMP configuration operation. Download the SNMP MIB file for this library from http://docs.overlandstorage.com/neo.

SNMP Status Events

This table provides information about SNMP events and the related Trap ID.

Event	Trap ID	Definition
Status Change	1	Library status has changed.
Door Open	2	Library door has been opened.
I/O Station Accessed	3	Library Mail Slot has been accessed.
Fault Posted	4	Library has posted a hard fault/error.
Request Drive Clean	5	Drive has requested a clean.
Drive Error	6	Drive has reported an error.
Loader Retries Excessive	7	Library has reported excessive load retries.
Loader OK	8	Library has resumed normal operations.
Account Password Change	9	Account password in the library has changed.
Configuration Change	10	Library or drive configuration has changed.
Library Login	11	Someone has logged into the library via the Web User Interface.
Library Logout	12	Someone has logged out of the library via the Web User Interface.

Network Time Protocol (NTP)

NTP is an Internet standard protocol that assures accurate synchronization of computer clock times in a network of computers. Running as a continuous background client program on a computer, NTP sends periodic time requests to a server, obtaining server time stamps, and using them to adjust the client's clock.

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Maximum Library Storage Capacity and Data Transfer Rate

Maximum library storage capacity and maximum data transfer rates are as follows:

Tape Drive Model	Host Interface
Ultrium 5 Half-Height drives	6 Gb/s SAS – dual port or 8 Gb/s FC
Ultrium 4 Half-Height drives	6 GB/s SAS – dual port or 8 Gb/s FC

Characteristic	Library Specification
Maximum storage capacity – Ultrium 5 Data Cartridges	• 9 data cartridges • Native: 13.5 TB (1.5 TB/cart.) • Compressed: 27 TB (2:1 compression)
Maximum storage capacity – Ultrium 4 Data Cartridges	• 9 data cartridges • Native: 7.2 TB (800 GB/cart.) • Compressed: 14.4 TB (2:1 compression)
Sustained native data transfer rate	• LTO 5 Half-Height: 140 MB/s • LTO 4 Half-Height: 120 MB/s

Ultrium Tape Drives

The NEO 100s tape libraries support the Ultrium 4 and Ultrium 5 half-height tape drives.

Each tape drive in the library is packaged in a container called a drive sled. The drive sled is a customer replaceable unit (CRU), and is designed for quick removal and replacement of a tape drive.

Both half-height tape drives either support two SAS SFF-8088 connectors that are compatible with SAS-1 cables, or one LC Fibre Channel connector.

Speed Matching

To improve system performance, the Ultrium 4 and Ultrium 5 tape drives use a technique called speed matching to dynamically adjust its native (uncompressed) data rate to the slower data rate of the attached server.

Channel Calibration

The channel calibration feature of the Ultrium 4 and Ultrium 5 tape drives customizes each read/write data channel for optimum performance. The customization enables compensation for variations in the recording channel transfer function, media characteristics, and read/write head characteristics.

Power Management

The Ultrium 4 and Ultrium 5 tape drives feature a power management function that controls the drive's electronics so that part of the electronics completely turn OFF when circuit functions are not needed for the drive's operation.

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Media

The NEO 100s library uses Ultrium Tape Cartridges that provide up to 1500 GB native capacity (up to 3000 GB with 2:1 hardware data compression) for Ultrium 5 tape drives and 800 GB native capacity (up to 1600 GB with 2:1 hardware data compression) for Ultrium 4 tape drives.

	LTO Ultrium Data Cartridges				
Ultrium Tape Drive	1500 GB (Ultrium 5)	800 GB (Ultrium 4)	400 GB (Ultrium 3)	200GB (Ultrium 2)	100GB (Ultrium 1)
Ultrium 5	Read/Write	Read/Write	Read only	–	–
Ultrium 4	–	Read/Write	Read/Write	Read only	–
Ultrium 3	–	–	Read/Write	Read/Write	Read only
Ultrium 2	–	–	–	Read/Write	Read/Write
Ultrium 1	–	–	–	–	Read/Write

NOTE: The NEO 100s tape libraries support only the Ultrium 4 and Ultrium 5 tape drives.

For more detailed information, see Chapter 5, "Media."

Logical Unit Number (LUN) Scanning

The NEO 100s library uses a single SCSI ID and dual LUNs to control the tape drive (LUN 0) and library accessor (LUN 1). The library requires a Host Bus Adapter (HBA) that supports LUN scanning. If it is not enabled, your host system will not scan beyond LUN 0 and will fail to detect the library. It will only see the tape drive.

NOTE: Some HBAs, such as RAID controllers, do not support LUN scanning.

Location Coordinates and Element Addresses

The NEO 100s library incorporates a high-density (HD) slot technology, which allows multiple cartridges to be stored in a tiered architecture. The depth of a cartridge location in a high-density slot is known as a tier. High-density slots are designed to contain multiple cartridges in Tiers 1 and 2.

NOTE: Each column has a spring-loaded mechanism that pushes a tape cartridge into Tier 1 when it is the only cartridge in that column. A single cartridge in a column takes on the Tier 2 element address even though it is physically located in Tier 1.

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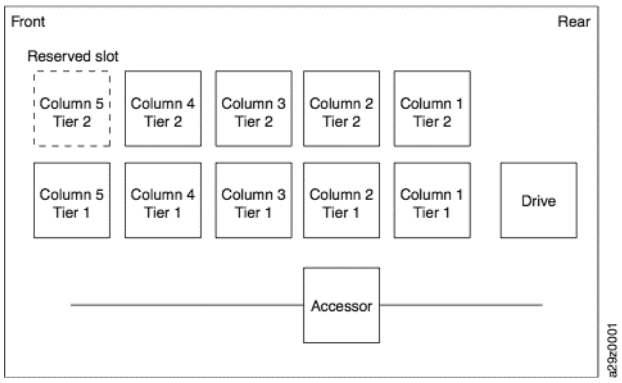

A storage element address is assigned to each cartridge at the time the cartridge is inserted. Storage element addresses range from 4097 to 4105 (0x1001 to 0x1009) when the Mail Slot is not enabled, and from 4097 to 4104 (0x1001 to 0x1008) when the Mail Slot is enabled.

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User Interfaces

The library has a local interface (Operator Control Panel), and a remote interface accessed via a web browser (Web User Interface).

The Operator Control Panel is located on the front of the library and allows users to work locally on the library. The Web User Interface allows users and administrators to view and perform some library functions from remote sites.

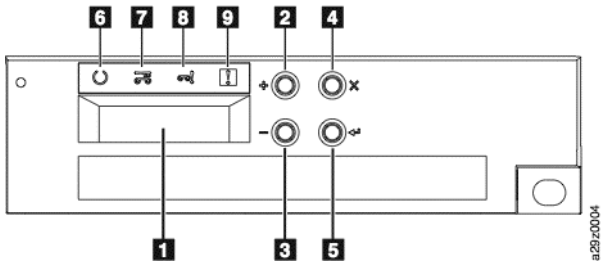
The Web User Interface is implemented as a Java Applet that runs in a web browser from any PC on the network. The Java Applet requires that Java 1.5.0 or higher be installed on your host computer for full functionality, and is best viewed using Internet Explorer 6.0 or higher. Internet Explorer 7.0 or higher is required for IPv6.

Topics in User Interfaces:

- Operator Control Panel
- Web User Interface

Operator Control Panel

The Operator Control Panel is located on the front bezel of the library. The Operator Control Panel displays library information and menu commands used to execute library management functions in response to the Control Key buttons located on the right of the LCD display.



Operator Control Panel component descriptions:

Number	Component	Description
1	LCD display	16-character LCD graphic display
2	UP (+)	Button used to navigate upward (^) through the menu items
3	DOWN (–)	Button used to navigate downward (V) through the menu items
4	CANCEL (X)	Button used to cancel a user action and return to the last menu item

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Number	Component	Description
5	SELECT (↵)	Button used to display a submenu or to select a user action
6	Ready/Activity LED	Green LED lit when the unit is powered ON. The LED flashes when there is any library activity or the library is offline.
7	Clean Drive LED	Amber LED lit when the drive needs cleaning. The LED turns OFF after the drive is cleaned successfully.
8	Attention LED	Amber LED lit when a cartridge is bad, marginal, or invalid. The LED turns OFF when the media is removed from the drive. The LED may also be lit when there is a power supply problem.
9	Error LED	Amber LED lit when there is an unrecoverable library or drive failure. The corresponding error message appears on the LCD display.

The Operator Control Panel operates in two basic modes:

- **User Interaction mode** – Mode employed when a user is pushing buttons on the Operator Control Panel.
- **System Driven mode** – Normal mode of operation where the Operator Control Panel displays status in response to commands issued from the drive's internal interface.

When an Operator Control Panel button is pressed and released, the Operator Control Panel automatically transitions to User Interaction mode. User Interaction mode continues until 3 minutes after a user stops pushing buttons, or the requested accessor action stops, whichever is longer, then the Operator Control Panel returns to System Driven mode.

If necessary, the Operator Control Panel will automatically transition to System Driven mode. When this occurs, the library remembers what the user was doing before the display mode changed. Therefore the next button pressed only transitions the Operator Control Panel to the User Interaction mode from the System Driven mode.

Any operational conflict between commands received over the host interface or the Web User Interface and those entered via the Operator Control Panel are avoided with a reservation mechanism on a first-come, first-served basis. Operator Control Panel commands are canceled by an Operator Control Panel logout or timeout.

Library firmware will not allow a user to select an impossible request. Those situations will include, but are not limited to:

- Moving a cartridge from any source to a position occupied by another cartridge
- Moving a cartridge from an empty cartridge position
- Loading a cartridge from any source to a full drive
- Unloading a cartridge from an empty drive

Any error detected by the library or drive controller and not recoverable through predetermined firmware algorithms is considered fatal. When an error occurs, an error code is displayed on the Operator Control Panel display and the error LED is ON. The error code remains on the Operator Control Panel until a button is pressed, which causes the Operator Control Panel to return to the Home Screen. Numeric error codes are used for unrecoverable fatal errors, otherwise text status messages are displayed.

When the library powers ON or resets, it goes through several internally controlled initialization processes, called the Power-On-Self-Test (POST).When the POST is finished, the library displays the Startup screen, then the Home screen.

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The Startup screen is the first screen that appears after powering ON the library. It contains the following information:

- **Firmware Rev**: the current level of library firmware
- **Drives**: the total number of drives that the library can support
- **Magazines**: the total number of magazines in the library
- **I/O Station**: the current status of the Mail Slot

Front Panel LEDs

All LEDs are updated during power ON and reset sequences. Upon power ON or software reset, the library illuminates all LEDs as soon as POST allows. When initialization starts, all LEDs are extinguished and the Ready/Activity LED flashes at a rate of approximately one second per cycle. When the mechanical initialization is complete, the Ready/Activity LED will stop flashing and be constantly illuminated.

If a library failure occurs, the Ready/Activity LED turns OFF and the Error LED turns ON. The Operator Control Panel also displays an appropriate error code to help identify the failure.

The following are additional operational details of LEDs:

- The **Ready/Activity** LED (6) is illuminated any time the unit is powered ON and functional. The Ready/Activity LED blinks whenever there is library or drive activity. This LED will also blink when the unit is OFFLINE.
- The **Clean** LED (7) is illuminated when either a cleaning requested or a cleaning required flag has been issued by the drive. The LED is turned off after a successful drive cleaning operation.
- The **Attention** LED (8) indicates one of the following conditions.

Problem	Action Required
Bad media	1. Go to **Monitor > Inventory** to locate the defective cartridge. 2. Move the defective cartridge to the Mail Slot. (Operator Control Panel: **Control > Move Cartridges**). 3. Open the Mail Slot to remove the defective cartridge. (Operator Control Panel: **Control > Open I/O**).
Drive sled issues	Do one of the following: • Install a different **drive sled**. • Modify or resubmit Logical Library setting (Operator Control Panel: **Configure > Logical Libraries** or Web User Interface: **Configure Library > Logical Libraries**). • Restore defaults (Operator Control Panel: **Configure > Restore Defaults** or Web User Interface: **Configure Library > Restore Defaults**).
Redundant power supply failed	Complete the following steps: 1. Replace the failed **power supply**. 2. Cycle library **power**.
Power supply fan failure	Replace the power supply.

- The **Error** LED (9) turns ON when there is an unrecoverable drive or library failure. An error message is displayed on the screen and the LED remains ON until the error state is resolved.

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NOTE: From the Operator Control Panel, run **Service > Library Verify**. If Library Verify runs without error, the Error LED turns off. If the error persists, recycle the power.

Input Modes

There are several ways to enter values in the different menu items. These values are selectable predefined values, toggle values (for example, ON/OFF) and numerical values like network addresses.

Selecting Predefined Values

1. To set the predefined values, press **SELECT** to select the menu item.
2. Using UP and DOWN, select one of the various **predefined values** for that item.
3. As soon as the Operator Control Panel display shows the correct value, press **SELECT** to apply the value.

Toggling Values

Toggle values are used to switch between two different states like ON and OFF.

1. After navigating to the menu item, press **SELECT** to select the menu item.
2. Using UP and DOWN, select one of the various **predefined states** for that item.
3. Press **SELECT** to apply the new state.

Entering Numerical Values

Numerical values are needed for network addresses, password entries, and other configuration entries.

1. After navigating to the menu item, the current value is displayed and the cursor highlights the **first digit** of the value that can be changed.
2. For each **digit** to be changed in the value:
   a. Use **UP** and **DOWN** to increment or decrement the digit.
   b. Press **SELECT** to highlight the next editable digit.
3. Press **SELECT** at the last digit to apply the complete entry (or press CANCEL to cancel the whole edit process and maintain the original value).

Logging in

At power ON or software reset, the library ready screen appears when POST initialization completes successfully.

To log in to the Operator Control Panel, press SELECT. The password entry screen appears.

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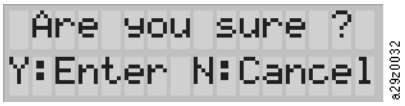
Press UP and DOWN to change the current digit. Press SELECT to advance to the next digit. The default password is 0000. Once you have logged in, you can change the password using the Change Login Password command. See "Configuring Operator Control Panel Settings" on page 4-10 for information about password settings.

Screen Elements

The Operator Control Panel display a single menu item (1) on each screen. The existence of other menu items above and below the currently displayed item is indicated by the arrows (2) on the right side of the screen.

In the Configuration menu, the current configuration setting is indicated by an asterisk (3) on the right side of the screen. For example, in the above figure, the Mail Slot is currently enabled. When changing a configuration setting, the confirmation screen appears:



Press SELECT to confirm, or CANCEL to return to the previous screen.

Web User Interface

Many of the same operations performed from the Operator Control Panel can also be performed remotely using the Web User Interface.

The Web User Interface lets you monitor and control your library from any terminal connected to your network or through the World Wide Web (WWW). The Web User Interface hosts a dedicated, protected Internet site that displays a graphical representation of your library.

For static IP Addresses only: After establishing a connection to the library, open any HTML browser and enter the IP address of the library. To configure the Web User Interface, you must first set the IP address using the Operator Control Panel. Refer to "Configuring Network Settings" on page 4-9 or "Configuring Network Settings" on page 4-21.

The Web User Interface Java Applet requires Java 1.5.0 or higher be installed on your host computer for full functionality, and is best viewed using Internet Explorer 6.0 or higher. Internet Explorer 7.0 or higher is required for IPv6. If your computer does not have Java installed or you need to upgrade your installation, download the latest version of the Java Runtime Environment (JRE) for your platform from http://www.java.com/ and follow the instructions provided to enable and configure the Java Runtime Environment for your browser.

The Web User Interface can also be used to update the library and drive firmware, and to download error logs, drive dumps, and other library data from the library.

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Before the NEO 100s can be managed over a network using the Web User Interface, you must set up the initial network configuration of the library using the Operator Control Panel.

Logging In

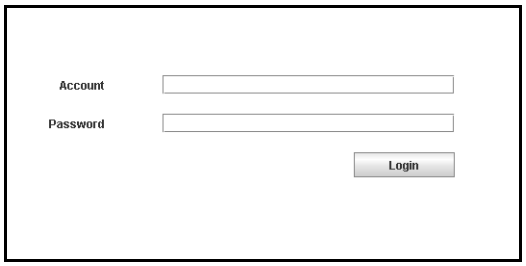
To log in to the Web User Interface from a browser, you need to enter the IP address of the library. The IP address can be obtained using the View Settings command from the Operator Panel. For example, http://192.168.1.1.

When the applet launches, the following warning message appears.

Warning - Security
The application's digital signature cannot be verified.
Do you want to run the application?
Name: WebAdmin
Publisher: IBM
From: http://9.11.219.138/
Always trust content from this publisher.
Run
Cancel
The digital signature cannot be verified by a trusted source. Only continue if you trust the origin of the application.
More Information...

This message is normal and does not indicate a problem. You can check the Always trust content from this publisher box to avoid the warning message in subsequent browser sessions.

After launching the Web User Interface, the login window is displayed.



The factory default account login and password for an Administrator account is:

- Account: **admin**
- Password: **secure**

The account name and password are case sensitive. After entering your account name and password, use your mouse to click Login or press the Enter key.

For information on account privileges, see "User Privileges."

User Privileges

User privilege levels are manually assigned to user accounts created within the library. Controlling access to screens and operations within the library preserves the integrity of the library and the data that is stored within the library.

There are three types of user privileges in the library:

- **Users** are allowed to monitor the library, but not perform actions that affect the physical library.

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- **Superusers** are allowed to operate the physical and logical library, but not perform actions that affect the library configuration.
- **Administrator users** are allowed access to the entire physical library and logical library, including configuration. One and only one administrator user must be assigned the login name admin.

User privileges include:

- Multiple users can be logged in at one time on the Web User Interface.
- Any user can be logged into only one interface at a time.

User Privilege Comparison Chart

Menu Command	User	Superuser	Administrator
MONITOR SYSTEM			
System Summary	X	X	X
Library Map	X	X	X
MANAGE LIBRARY			
Move Cartridges	-	X	X
Unload Drive	-	X	X
Clean Drive	-	X	X
Library State	-	X	X
Inventory	-	X	X
CONFIGURE LIBRARY			
User Access	-	-	X
Physical	-	-	X
Logical	-	-	X
Network	-	-	X
Date and Time	-	-	X
Notifications	-	-	X
Save/Restore	-	-	X
SERVICE LIBRARY			
Operator Interventions	X	X	X
View Library Logs	X	X	X
Traces	-	-	X
Download Drive Logs	-	-	X
Download Library Logs	X	X	X
Reset Library/Drive	-	-	X
Firmware Update	-	-	X
Usage Statistics	-	-	X

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Help Pages

Each screen on the Web User Interface has an associated Help page. To access a Help page, click Help in the upper right corner of the screen. A new web page will open. Using the left navigation pane, select the desired Help page. To close the Help page, click the red **X** in the upper right corner of the screen.

Logging Out

To log out of the Web User Interface, click **Logout** in the upper right corner of the current screen.

NOTE: If you click the **X** in the upper right corner of your internet browser window, the screen will close but you will not be logged out of the Web User Interface.

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Chapter 3

Installation & Configuration

To install and configure rack-mounted NEO 100s library, perform the procedures in this chapter in the order they are presented.

Topics in Installation & Configuration:

- Choosing a Location
- Installing in a Rack
- Library Default Settings
- Configuring Your Library with the Web User Interface
- Configuring Your Library using the Operator Control Panel
- Populating the Library with Cartridges
- Verifying Library and Drive Operation
- Taking the Library Online
- Registering for Support Notification

Choosing a Location

Choose a location that meets the following criteria:

Criteria	Definition
Room Temperature	16 to 32°C (60 to 90°F)
Power Source	AC Power Voltage: 100 to 240 Vac. (4.0 to 1.5 A) Line Frequency: 50 to 60 Hz Place the library near an AC outlet. The AC power cord is the product's main AC disconnect device **NOTE:** The power switch is located on the rear of the library. Both it and the AC power cord must be easily accessible at all times.
Relative humidity	20 to 80% non-condensing

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Criteria	Definition
Air quality	The library should be placed in an area with minimal sources of particulate contamination. Avoid areas near frequently used doors and walkways, stacks of supplies that collect dust, printers, and smoke-filled rooms. Excessive dust and debris can damage cartridges and the tape drive.
Clearance	• Back: Minimum of 15cm (6 in.) • Front: Minimum of 30cm (12 in.) • Sides: Minimum of 5cm (2 in.)
Rack requirements	Standard EIA 19-inch rack: 1U space (4.45 cm/1.75 in.)

Installing in a Rack

The NEO 100s each come with a rack shelf kit for easy installation and securing of the library into a 19-inch (EIA-310) rack.

IMPORTANT: Two-post telco-style or other racks less than 29 inches in depth will NOT support this library and should not be used.

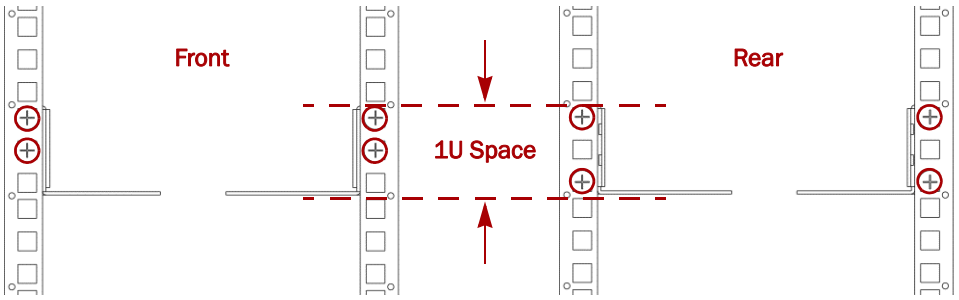
When deciding on a location in your rack for the library, remember that the Operator Control Panel has a small LCD screen and should be positioned to allow for easy viewing. The rear of the library should be free from any obstructions to allow easy access to the power switch and other rear panel components.

Install the Rack Rails

WARNING: Due to the weight of the appliance, it is recommended that at least two people be used to lift the unit out of the box to prevent injury.

AVERTISSEMENT: En raison du poids de l'appareil, il est recommande d'utiliser deux personnes au moins pour soulever l'appareil hors de la boîte pour éviter les blessures.

1. Using two people, remove the **library** from its box and set it on a secure surface.
2. Determine the **location** in your rack for your library to be installed and, using a pencil, mark the location on both the front and rear vertical rails.



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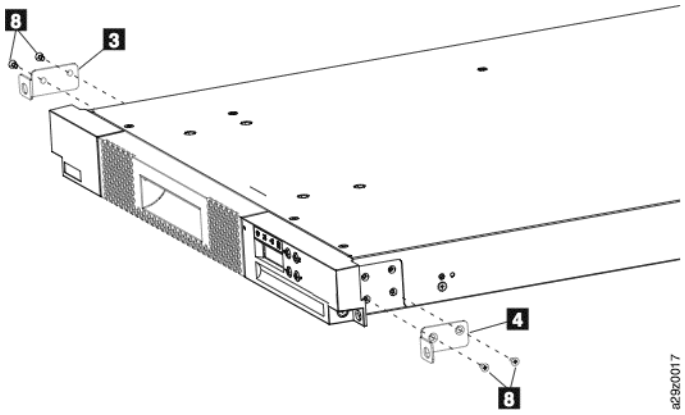
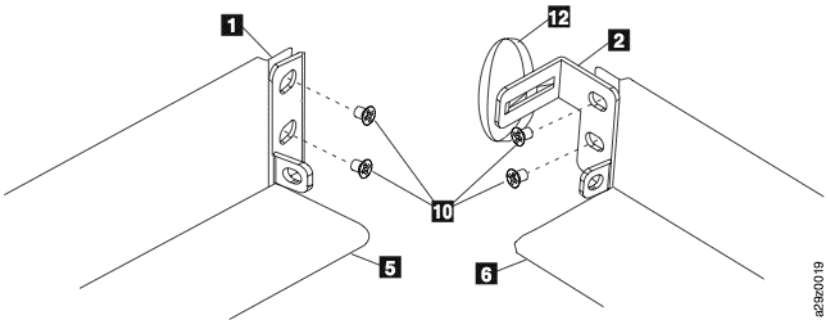
3. Attach the left (3) and right (4) **front brackets** to the front of the library chassis using two flat-head screws (8) on each side.



Use the bottom two screw holes on each side.

4. Attach the left (1) and right (2) **rear brackets** to the left (5) and right (6) front rails using two round-head screws (10) on each side.

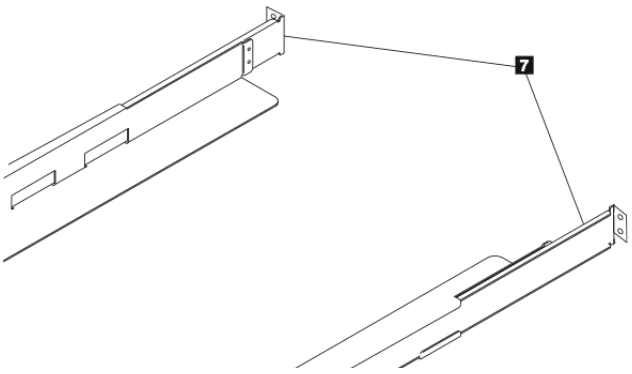


IMPORTANT: Do NOT tighten the rear bracket screws completely at this time to allow for adjustment during installation.

5. Run the hook and loop fastener **strap** (12) through the slot on the right rear bracket and attach it back upon itself.

6. Slide the **rear rails** (7) into the front rails from back to front, to create the rail assemblies.

Ensure the flanges with the screw holes face outwards.



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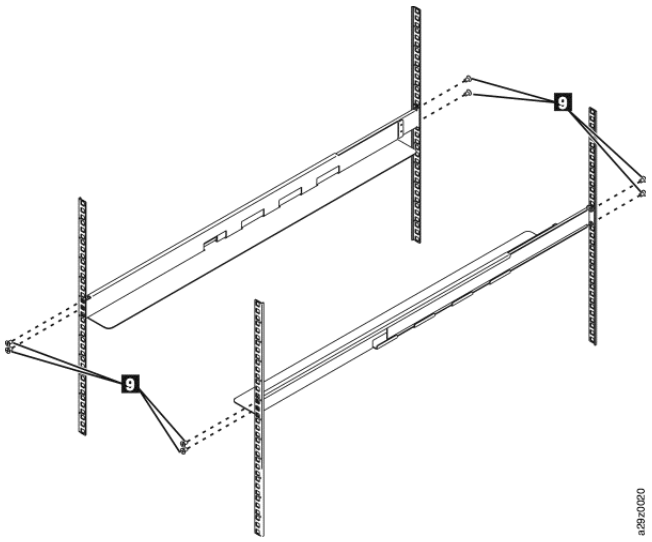
7. Install the **rail assemblies** into the rack. Ensure the three holes in the front of the unit align with the 1U space marked on the vertical rails in Step 2. Secure the rails to the rack using four flat-head screws (9) on each side of the rack.

   Use both of the two screw locations on the **rear** of the rack rail. Use the top and middle screw locations on the **front** of the rack rail.



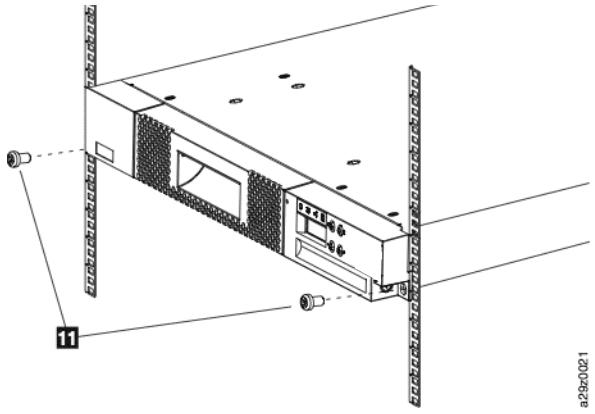
Once the rails are secure, you are ready to insert the library into the rack.

Install the Library into Rack

WARNING: It is recommended that a mechanical lifter (or at least two people) be used to raise and align the unit to prevent injury during installation. Use care when inserting or removing a unit into or out of a rack to prevent the accidental tipping of the rack, causing damage or personal injury.

AVERTISSEMENT: Afin d'éviter des blessures pendant l'installation, il est recommande d'utiliser un monte-charge (ou au moins deux personnes) pour élever ou aligner l'appareil. Faites attention lorsque vous insérez ou retirez l'appareil d'un support, pour empêcher le déversement accidentel de la crémaillère causant des dommages et des blessures.

1. Slide the **library** into the rack.
2. Secure the front of the library to the rack using the large **black screws** (11) in the bottom holes on each front bracket.



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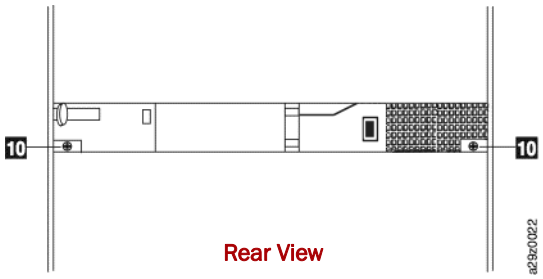
3. Secure the rear of the library to the rack using a **round-head screw** (10) on each rear bracket.



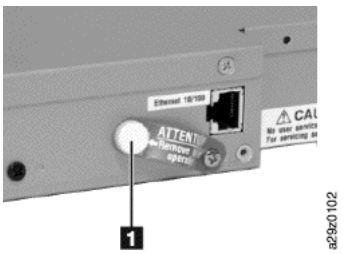
4. Tighten the other **rear bracket screws** on the rail to secure the library to the rack.

Removing the Accessor Locking Screw

IMPORTANT: The shipping lock, which prevents the library accessor from moving during shipment, must be removed before the library is powered ON.

The shipping lock is held in place with a label and is located in the top center of the library.

1. Unscrew the **shipping lock** (1).



2. After the shipping lock is removed, allow it to hang attached to the **label** for future use.

Attaching the Cables

CAUTION: It is recommended that you shut down and turn OFF the associated server and turn OFF all attached devices. Remove the power cables from the server and all attached accessories. Failure to remove the power cords from these devices before connecting the host interface cable could result in damage to the NEO 100s library.

All cabling, power connections, and cooling are located on the NEO 100s rear panel.

1. Run the SAS cable, power cord, and Ethernet cable through the hook and loop **fastener strap** (12), leaving enough slack to reach and attach to the corresponding connectors.

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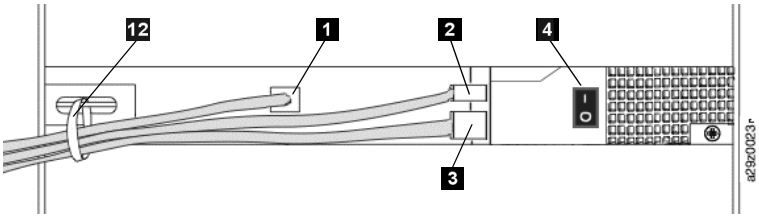

1 – Ethernet Cable
2 – SAS Cable
3 – AC Power Cord
4 – Power Switch
12 – Loop Fastener Strap

2. Plug the **Ethernet** (1) and **SAS** (2) cables into their respective ports.
3. Plug in the **power cord** (3).
4. Tighten the hook and loop **fastener strap** (12).
5. Turn ON the **Power switch** (4).
   Wait for the library to initialize.

NOTE: If the Operator Control Panel does not initialize, check all cable connections, and ensure that the cartridge magazine is closed and in the locked position, and that the power supply switch is in the ON position. When power cycling the library, wait 10 seconds after the power is OFF before powering ON again. If the Operator Control Panel still does not initialize, see Chapter 6, "Troubleshooting."

The drive is attached to a server using the Serial Attached SCSI (SAS) interface. The Web User Interface accesses the library using an Ethernet interface.

Library Default Settings

The library can be configured using the Web User Interface and/or the Operator Control Panel. The recommended method for configuring your library is using the Web User Interface. See "Configuring Your Library with the Web User Interface" on page 3-8 and "Configuring Your Library using the Operator Control Panel" on page 3-18.

For complete detailed information on all of the functions available on the library using both the Operator Control Panel and the Web User Interface, see Chapter 4, "Operations."

The default library configuration settings are listed below.

Configuration Item	Default Setting
NETWORK	
Ethernet link speed	Auto
SSL security	Disabled
IPv4 settings	Enabled
DHCP (Dynamic Host Configuration Protocol)	Enabled
Static IP address	Disabled
IPv4 address	0.0.0.0

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Configuration Item	Default Setting
Subnet mask	255.255.255.0
Gateway	0.0.0.0
IPv6 settings	Disabled
DHCP (Dynamic Host Configuration Protocol)	Enabled
Stateless auto-configuration	Enabled
Static IP address	Disabled
IPv6 address	0:0:0:0:0:0:0:0
Prefix length	64
Gateway	0:0:0:0:0:0:0:0
DNS setting	Disabled
DNS IP address	0.0.0.0
PHYSICAL	
Library name	(Blank)
Auto Cleaning	Disabled
Bar code label length	8 characters
LOGICAL	
Library mode	Random
Loop	Enabled
Auto Load	Enabled
Active slots	9 + 0
DATE and TIME	
NTP server	Disabled
NTP server address	0.0.0.0
Time zone (GMT)	+00:00
Date (MM/DD/YYYY)	01/08/2008
Auto adjustment by PC	Every 1 minute
NOTIFICATIONS	
SMTP (mail) settings	
Mail server address	0.0.0.0
Mail event	Error events enabled
SNMP (trap) settings	
Community	Public
Trap event	Error events enabled
SNMPv3 engine ID	(Set by library firmware)

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Static library network settings must be entered using the Operator Control Panel before the library can be accessed remotely using the Web User Interface. If your system is serviced by a Dynamic Host Configuration Protocol (DHCP) server, the network parameters will be automatically set. Once remote access has been established, you can complete the configuration of your library remotely.

If you choose to use the Operator Control Panel to configure your library, go to "Configuring Your Library using the Operator Control Panel" on page 3-18.

Configuring Your Library with the Web User Interface

If you choose to use the Web User Interface to configure your library, first enter your library network settings using the Operator Control Panel (see "Configuring Network Settings" on page 4-9).

NOTE: To access the Web User Interface, be sure Java 1.5.0 or higher is installed on your host computer. Download the latest version of the Java Runtime Environment (JRE) for your platform from http://www.java.com/.

Topics in Configuring Your Library with the Web User Interface:

- Logging in to the Web User Interface
- Checking Firmware Level
- Configuring Library Settings
- Configuring Network Settings
- Configuring Date and Time Settings
- Configuring Email Notifications
- Configuring Trap Notifications
- Managing User Access
- Saving the Library Configuration

Logging in to the Web User Interface

To log in to the Web User Interface:

1. If necessary, obtain the **IP address** of the library on the Operator Control Panel.
   a. From the **top menu** of the Operator Control Panel, press DOWN to select View Current Information, and then press SELECT.
   b. Press DOWN until the **IP Address** setting is displayed and make a note of the IP address.
   c. Press **CANCEL** twice to log out of the Operator Control Panel.
2. Open the **browser** on your server or PC to access the Web User Interface.
3. In the browser address field, enter your library's **IP Address URL** to launch the Web User Interface applet in the browser window. For example, http://192.168.1.1

   When the applet launches, a warning message appears. This message is normal and does not indicate a problem.

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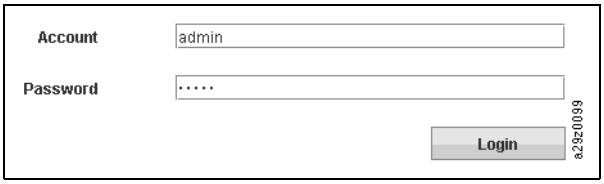
Warning - Security
The application's digital signature cannot be verified.
Do you want to run the application?
Name: WebAdmin
Publisher: IBM
From: http://9.11.219.138/
Always trust content from this publisher.
Run
Cancel
The digital signature cannot be verified by a trusted source. Only continue if you trust the origin of the application.
More Information...
a29z0160

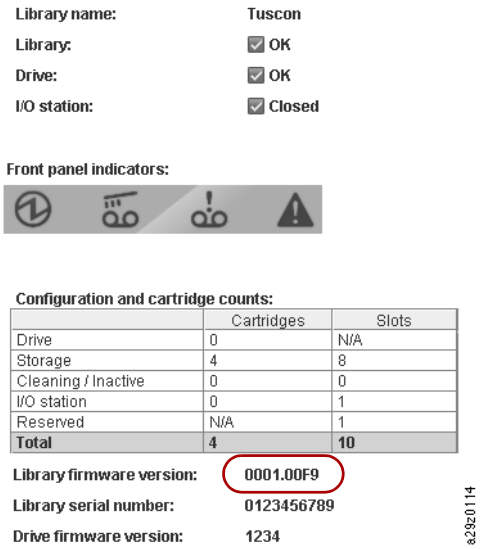
4. At the Warning – Security message, click **Run**. To bypass the security warning message each time you start a new browser session, click the **Always trust content from this publisher** checkbox.
5. On the Web User Interface login screen, enter the administrator login account **name** and default **password**:
   - Account: **admin**
   - Password: **secure**



6. Click **Login**.

Checking Firmware Level

Check the current level of library firmware as displayed in the System Summary:



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Go to Downloads and Resources – NEO Series page at the Overland Storage website:

http://docs.overlandstorage.com/neo

If an updated level of firmware is available, follow the appropriate instructions to download the **latest** software file. Update the library firmware before normal operation starts. See "Servicing the Library" in Chapter 4, "Operations."

Configuring Library Settings

Use the following procedures to configure either the logical or physical library settings.

Logical Library Settings

To configure the library access mode settings for the logical library:

1. Expand **Configure Library**, if necessary, and click **Logical** in the left navigation pane of the Web User Interface.
2. Select the **Library Mode**.

- **Random** – In random mode, the library allows the server's (host's) application software to select any data cartridge in any order.
- **Sequential** – In sequential mode, the library's firmware predefines the selection of the cartridges. After initialization, the firmware causes the library to select the first available cartridge found (counting from the lowest Column/Tier position through the highest cartridge position in your library) for loading into the drive. See "Location Coordinates and Element Addresses" on page 1-8.
  - **Loop** – Sequential mode with loop mode ON loads the cartridge in the lowest Column/Tier cartridge position after the cartridge in the highest Column/Tier cartridge position has been filled with data and sent back to its home position. This allows endless backup operations without user interaction.
  - **Autoload** – Sequential mode with autoload mode ON loads the first available cartridge (the lowest Column/Tier cartridge position that contains a cartridge) automatically if the library powers ON, or resets, with an empty drive. If the library powers ON with a cartridge already in the drive, sequential mode will start from the home position of that cartridge, unless the host issues a rewind and unload command to the drive, in which case the next cartridge in sequence will be loaded into the drive.

  To start sequential mode if autoload is OFF, use the Move Cartridge command to load the first cartridge into the drive. The sequence starts from the home position of that cartridge. Cartridges need not be in contiguous slots.

  To stop sequential mode, use the Move Cartridge command to unload the drive. This cancels sequential mode; the next sequential cartridge is NOT loaded.

  To restart sequential mode, use the Move Cartridge command again to load a cartridge; the loading sequence will resume from the home position of that cartridge.

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- **Number of active slots** – Select the number of active slots you would like to assign in your library. Selecting the number of active slots defines the number of storage slots, number of cleaning/inactive slots, whether the Mail Slot is enabled/disabled, and whether auto cleaning is allowed. The first digit configures the number of active storage positions (4, 6, 8, or 9). The second digit configures Column 5, Tier 1 of the magazine as an Mail Slot (0 when disabled, and 1 when enabled). The Auto Cleaning function can be enabled only if there is at least 1 inactive position in the magazine. If Auto Cleaning is enabled, the inactive positions become cleaning cartridge positions.

3. Click **Submit** to enable the settings.

Physical Library Settings

To configure the library cartridge assignment settings, complete the following procedure:

1. Expand **Configure Library**, if necessary, and click **Physical** in the left navigation pane of the Web User Interface.
2. Select the **Library** settings.

- **Library name** – Enter a name for your library.
- **Auto Cleaning** – Automatically cleans the drive when the drive requests cleaning and a cleaning cartridge is present in the library. Auto cleaning can be enabled only when there is at least 1 inactive position in the magazine in the library.
- **Bar code label length** – Use to choose the number of characters in the cartridge bar code that is reported to the host computer.

3. Click **Submit** to enable the settings.

Configuring Network Settings

Once the network settings have been entered on the Operator Control Panel, the current network configuration of the library can be modified using the Web User Interface. The changes made to the network settings do not take affect until after the library is rebooted.

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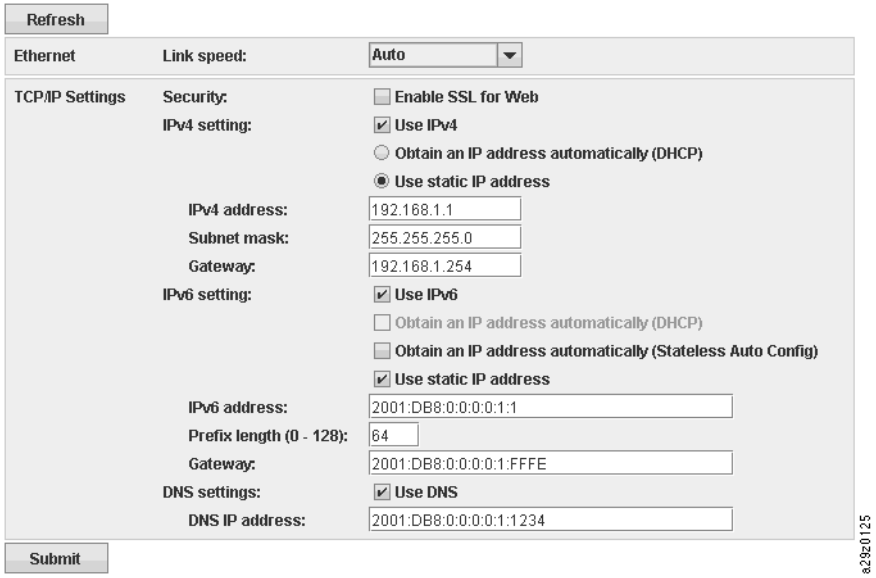
To modify the network settings:



1. Expand Configure Library, if necessary, and click **Network** in the left navigation pane of the Web User Interface.
2. Select the **Ethernet Link speed** (duplex mode).
3. Select the **TCP/IP settings**. To enable dual IPv4/IPv6 protocol, select both Use IPv4 and Use IPv6 and enter parameters for both.
   - **Security** – Select Enable SSL for Web to provide secure communications between the web browser and the tape library.
   - **IPv4 setting** – Select **Use IPv4** to enable the IPv4 Internet Protocol. Select the corresponding radio button to obtain an IP address automatically (DHCP) or use static IP address settings. When using DHCP, use the Operator Control Panel to determine the library's assigned IP address. (See "Viewing Current Information" on page 4-3.) Enter the following parameters if using static IP address settings.
     - IPv4 address – Sets the TCP/IPv4 address of the library on the network.
     - Subnet mask – Defines and limits users within a local network.
     - Gateway – Allows access outside the local network.
   - **IPv6 setting** – Select Use IPv6 to enable the IPv6 Internet Protocol. Select the corresponding radio button to obtain an IP address automatically (DHCP), to obtain an IP address using stateless auto configuration, or use static IP address settings. Enter the following parameter if using static IP address settings.
     - IPv6 address – Sets the TCP/IPv6 address of the library on the network.
     - Prefix length – Decimal value indicating the number of contiguous, high-order bits comprising the network portion of the address.
     - Gateway – Allows access outside the local network.
   - **DNS setting** – Select Use DNS to use a domain name server. The DNS server, if entered, date and time, and notifications IP addresses to be specified using host names instead of numerical IP addresses.
     - DNS IP address – Sets the IP address of the DNS server.
4. Click **Submit** to enable the settings.

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Configuring Date and Time Settings

Configure the date and time settings using one of three methods: automatically using a remote NTP time server on the network, automatically using your the clock on your host computer, or manually.

NOTE: Selecting the Refresh button will refresh the date and time. If you choose to manually set your date and time, you will need to reset the date and time after power cycling the library and after a library reset. When power cycling the library, wait 10 seconds after the power is OFF before powering ON again.

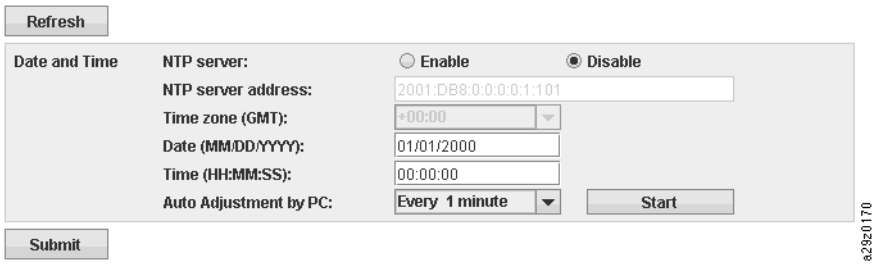
Once the network settings have been entered on the Operator Control Panel, the current date and time can be modified using the Web User Interface.

The NEO 100s library communicates with an NTP server with the following conditions:

- Client-server basis operation
- UDP (User Datagram Protocol) to access the NTP server
- Does not use authentication keys
- Library polling is every 12 hours

To modify the date and time settings:

1. Expand Configure Library, if necessary, and click **Date and Time** in the left navigation pane of the Web User Interface.



2. Select the Date and Time **settings**.
   - **NTP Server** – Enables time and date control using a time server on the network.
     - **NTP server address** – Enter the IP address of the time server. IPv4 and IPv6 addresses are supported, depending on the TCP/IP settings. Hostnames can be entered instead of numerical IP addresses if Use DNS is selected in the Network settings.
     - **Time zone** – Enter the time zone relative to Greenwich Mean Time (GMT).
   - If the time server is disabled, enter the **local** time and date manually.
     - **Date** – Enter the date using the MM/DD/YYYY format.
     - **Time** – Enter the time using the HH:MM:SS format.
   - **Auto Adjustment by PC** – Select a time interval and click Start to synchronize the library with the clock on your host computer at regular intervals. The Web User Interface Java Applet must be running continuously to use this function.
3. Click **Submit** to update the settings.

Configuring Email Notifications

NOTE: This is an optional procedure.

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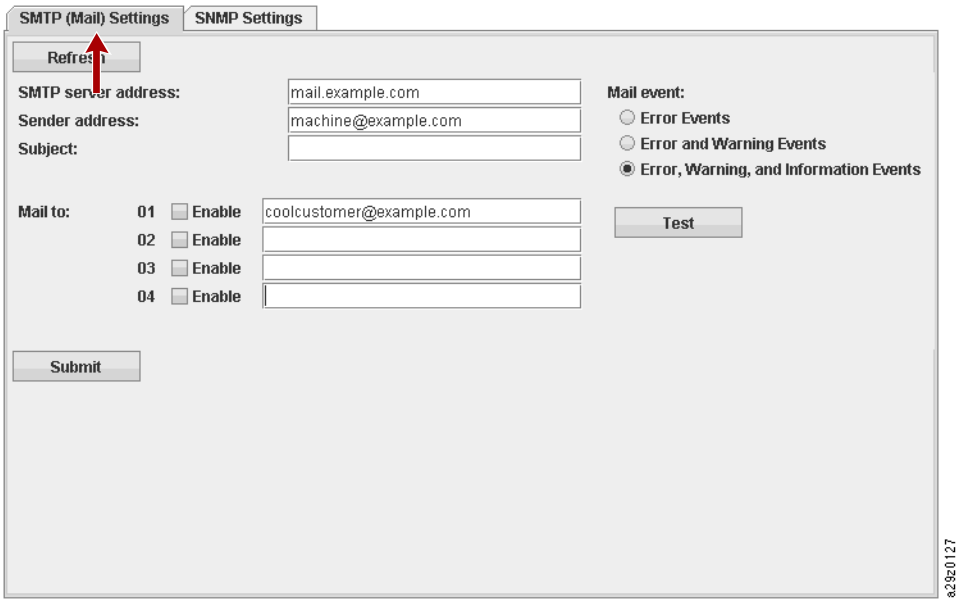
To set up email notifications of library events:

1. Expand Configure Library, if necessary, and click **Notifications** in the left navigation pane of the Web User Interface.
2. Click the **SMTP (Mail) Settings** tab.



3. Configure the SMTP server and header **settings**.
   - **SMTP server address** – SMTP mail server address. IPv4 and IPv6 addresses are supported. Hostnames can be entered instead of numerical IP addresses if the DNS server is specified in the Network settings.
   - **Sender address** – Mail header information.
   - **Subject** – Mail header information.
4. Enter the **email addresses** to be notified when an event takes place in the Mail To fields.
5. Select the **event level** to report in the Mail Event field.
6. Click **Test** to send a test email message to the enabled addresses.
7. Click **Submit** to enable the settings.

Configuring Trap Notifications

NOTE: This is an optional procedure. SNMP notifications are not enabled unless there is a check mark in the SNMP Enabled checkbox. To disable SNMP notifications, clear the SNMP Enable checkbox and click the Submit button.

The traps supported by the NEO 100s library are listed in "Trap Definitions (Types)" on page B-15.

To set up trap notifications for an SNMP server:

1. Expand Configure Library, if necessary, and click **Notifications** in the left navigation pane of the Web User Interface.

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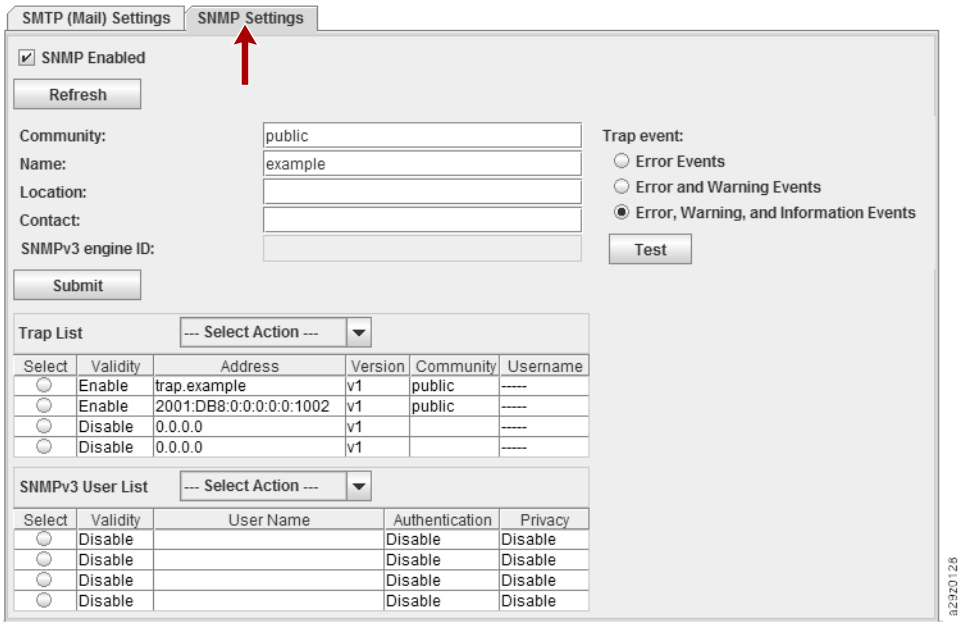
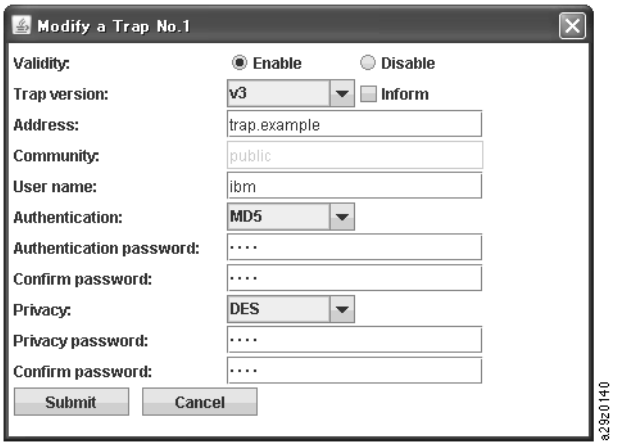
2. Click the **SNMP Settings** tab.



3. Click to place a check mark in the **SNMP Enabled** checkbox.
4. Configure the SNMP server and header **settings**.
   - **Community** – SNMP community name to which the library belongs.
   - **Name** – Unique SNMP name for the system.
   - **Location** – Physical location of the system.
   - **Contact** – Name of the person's receiving the notice.
   - **SNMPv3 engine ID** – A read-only attribute identifying the SNMPv3 engine.
5. Enter the **trap IP addresses** of the SNMP monitoring stations to be notified when an event takes place and the security settings in the Trap List pop-up menu.



   - **Validity** – Enable/Disable setting.
   - **Trap version** – v1, v2c, or v3. For v2c and v3, the Inform checkbox determines whether an SNMP INFORM request is sent instead of a trap event.
   - **IP address** – IPv4 and IPv6 addresses are supported. Hostnames can be entered instead of numerical IP addresses if the DNS server is specified.

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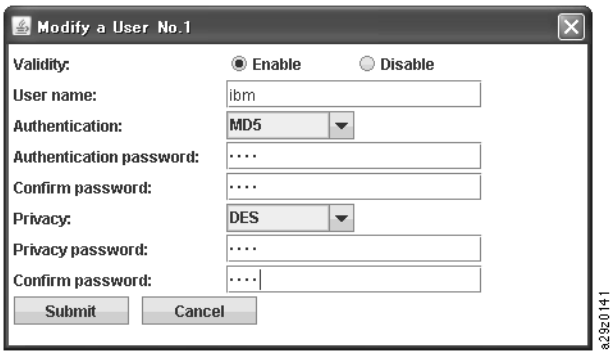
- **Community** (v1 or v2c) – SNMP community name.
- **User name** (v3 only) – SNMPv3 unique user name.
- **Authentication** (v3 only) – Authentication algorithm, MD5 or SHA. When an algorithm is specified, an authentication password and confirmation of the password are required.
- **Privacy** (v3 only) – Privacy service encryption and decryption algorithm, DES or AES. When an algorithm is specified, a privacy password and confirmation of the password are required.

6. Enter the **SNMPv3 users** who are permitted to access the tape library in the SNMPv3 User List pop-up menu.



- **Validity** – Enable/Disable setting.
- **User name** – SNMPv3 unique user name.
- **Authentication** – MD5 or SHA authentication algorithm. When an algorithm is specified, an authentication password and confirmation of the password are required.
- **Privacy** – DES or AES privacy service encryption and decryption algorithm. When an algorithm is specified, a privacy password and confirmation of the password are required.

7. Select the **event level** to report in the Trap event field.
8. Click **Test** to send a test trap notification to the enabled IP addresses.
9. Click **Submit** to enable the settings.

Managing User Access

NOTE: This is an optional procedure.

To add users able to access the library using the Web User Interface:

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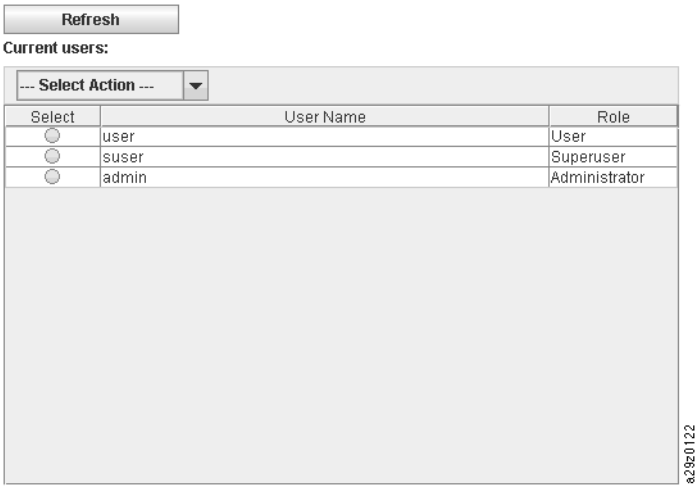
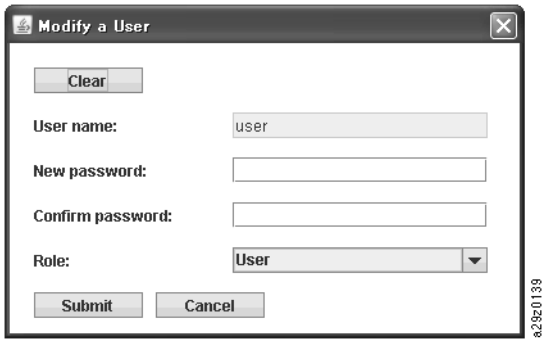


1. Expand Configure Library, if necessary, and click **User Access** in the left navigation pane of the Web User Interface.
2. Select the **Add** action in the pop-up menu.



   - Add – To add new users.
   - Modify – To change the selected user's access role and/or password.
   - Remove – To delete the selected user from the system.
3. Enter the **user name** and **password** information in the dialog box.
4. Assign a user access **role**.
   - **User** – This permission allows users to monitor the library, but not to perform functions that affect the library.
   - **Superuser** – This permission allows users to operate the physical and logical library, but not to change configuration settings.
   - **Administrator** – This permission allows users to perform tape library functions and change configuration settings.
5. Click **Submit** to enable the settings.

Saving the Library Configuration

NOTE: This is a recommended procedure.

Each time you change the configuration of your library, you should save the configuration. This function also allows you to maintain several library configuration profiles that can be restored to the library when desired using the Web User Interface.

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To save library configuration:

1. Expand Configure Library, if necessary, and click **Save/Restore** in the left navigation pane of the Web User Interface.
2. Click **Save** to create a configuration file of your library on your computer.

Configuring Your Library using the Operator Control Panel

To configure your library using the Operator Control Panel, complete these procedures.

Topics in Configuring Your Library using the Operator Control Panel:

- Logging in to the Operator Control Panel
- Configuring Network Settings
- Configuring Library Settings

Logging in to the Operator Control Panel

In many environments, the default network settings may be sufficient to access your tape library on a network. To change the default network settings using the Operator Control Panel, complete the following procedure:

1. When the library is initialized, press **SELECT** to move to the Password screen.
2. Enter **0000**, the default password. The top menu screen appears.
3. When finished using the Operator Control Panel, press **CANCEL** to return to the top menu screen.
4. Press **DOWN** to select Logout, and press **SELECT**.

Configuring Network Settings

In many environments, the default network settings may be sufficient to access your tape library on a network. To change the default network settings using the Operator Control Panel, complete the following procedure:

1. From the top menu screen, press DOWN to select **Configuration**, and press SELECT.
2. If necessary, set **link speed** (Default: Auto Negotiation):
   a. Select **Configure Network Settings > Configure Link Speed**.
   b. Select the **required speed** and press SELECT.
   c. Press SELECT again to **apply** the setting (or CANCEL to reject the setting). The speed must be set to Set Auto Negotiation for gigabit Ethernet networks.
   d. Press CANCEL to **backtrack** through the menu hierarchy.
3. If necessary, set **DHCP IPv4** (Default: Enabled):
   a. Select **Configure Network Settings > Configure DHCP > Configure DHCP IPv4**.

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b. Select **one** of the options:
   - Enable DHCP IPv4 to enable.
   - Disable DHCP IPv4 to disable.

c. Press SELECT again to **apply** the setting (or CANCEL to reject the setting).

d. Press CANCEL to **backtrack** through the menu hierarchy.

4. If necessary, set **DHCP IPv6** (Default: Disabled):

   a. Select Configure Network Settings > Configure DHCP > Configure DHCP IPv6.

   b. Select **one** of the options:
      - Enable DHCP IPv6 to enable.
      - Disable DHCP IPv6 to disable.

   c. Press SELECT again to **apply** the setting (or CANCEL to reject the setting).

   d. Press CANCEL to **backtrack** through the menu hierarchy.

5. If necessary, set **IPv4/IPv6 Address** (Default: 0.0.0.0):
   If DHCP is disabled, set the IP address manually.

   a. Select Configure Network Settings > Change IP Address.

   b. Select **one** of the options:
      - Set IP Address IPv4 to enter the IPv4 address of the tape library.
      - Set IP Address IPv6 to enter the IPv6 IP address (four screens).

   c. Press SELECT again to **apply** the setting (or CANCEL to reject the setting).

   d. Press CANCEL to **backtrack** through the menu hierarchy.

6. If necessary, set **IPv4 Subnet Mask** (Default: 255.255.255.0):
   If DHCP IPv4 is disabled, set the IPv4 subnet mask manually.

   a. Select Configure Network Settings > Change Subnet Mask > Set Subnet Mask.

   b. Enter the IPv4 **subnet mask** dot-decimal notation.

   c. Press SELECT again to **apply** the setting (or CANCEL to reject the setting).

   d. Press CANCEL to **backtrack** through the menu hierarchy.

7. If necessary, set **IPv6 Prefix Length** (Default: 64):
   If DHCP IPv6 is disabled, set the IPv6 prefix length manually.

   a. Select Configure Network Settings > Change Subnet Mask > Set Prefix Length.

   b. Enter the IPv4 **prefix length**.

   c. Press SELECT again to **apply** the setting (or CANCEL to reject the setting).

   d. Press CANCEL to **backtrack** through the menu hierarchy.

8. If necessary, set **IPv4/IPv6 Gateway** (Default: 0.0.0.0):
   If DHCP is disabled, set the Gateway IP address manually.

   a. Select Configure Network Settings > Change Gateway.

   b. Select **one** of the options:
      - Set Gateway Address IPv4 to enter the IPv4 gateway address.
      - Set Gateway Address IPv6 to enter the IPv6 gateway address (four screens).

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c. Press SELECT again to **apply** the setting (or CANCEL to reject the setting).

d. Press CANCEL to **backtrack** through the menu hierarchy.

9. Press **CANCEL three times** to return to the top menu screen.

Configuring Library Settings

To configure the library settings, complete the following procedure:

1. From the top menu screen, press DOWN to select **Configuration**, and press SELECT.
2. Select **Configure Library**, and press SELECT.
3. If necessary, change **I/O Station** (Mail Slot) setting (Default: Disabled):
   a. Select **Configure Library > Configure I/O Station**.
   b. Select **one** of the options:
      - **Enable I/O Station** to enable the Mail Slot.
      - **Disable I/O Station** to disable the Mail Slot.
   c. Press SELECT again to **apply** the setting (or CANCEL to reject the setting).
   d. Press CANCEL to **backtrack** through the menu hierarchy.
4. If necessary, set **Active Slots** (Default: All):
   a. Select **Configure Library > Set Active Slots Count**.
   b. Select the **number of active slots** you would like to assign for the logical library.
   c. Press SELECT again to **apply** the setting (or CANCEL to reject the setting).
   d. Press CANCEL to **backtrack** through the menu hierarchy.
5. If necessary, set **Library Mode** (Default: Random):
   a. Select **Configure Library > Configure Library Mode**.
   b. Select **Set Random Mode** or **Configure Sequential Mode**, and press SELECT.
      - **Random** – In random mode, the library allows the server's (host's) application software to select any data cartridge in any order.
      - **Sequential** – In sequential mode, the library's firmware predefines the selection of the cartridges. After initialization, the firmware causes the library to select the first available cartridge found (counting from the lowest Column/Tier position through the highest cartridge position in your library) for loading into the drive.
        - **Loop** – Sequential mode with loop mode ON loads the cartridge in the lowest Column/Tier cartridge position after the cartridge in the highest Column/Tier cartridge position has been filled with data and sent back to its home position. This allows endless backup operations without user interaction.

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- **Autoload** – Sequential mode with autoload mode ON loads the first available cartridge (the lowest Column/Tier cartridge position that contains a cartridge) automatically if the library powers ON, or resets, with an empty drive. If the library powers ON with a cartridge already in the drive, sequential mode will start from the home position of that cartridge, unless the host issues a rewind and unload command to the drive, in which case the next cartridge in sequence will be loaded into the drive.

To start sequential mode if autoload is OFF, use the **Move Cartridge** command to load the first cartridge into the drive. The sequence starts from the home position of that cartridge. Cartridges need not be in contiguous slots.

To stop sequential mode, use the **Move Cartridge** command to unload the drive. This cancels sequential mode; the next sequential cartridge is NOT loaded.

To restart sequential mode, use the **Move Cartridge** command again to load a cartridge; the loading sequence will resume from the home position of that cartridge.

c. Press SELECT again to **apply** the setting (or CANCEL to reject the setting).

d. Press CANCEL to **backtrack** through the menu hierarchy.

6. If desired, manually set **Date/Time**:

   Enter the local time and date manually if you do not plan to use a network-based time server.

   a. Select **Configure Library > Configure Date/Time**.

   b. Select **Set Date** or **Set Time**, and press SELECT.

      - **Date** – Enter the date using the MM/DD/YYYY format.
      - **Time** – Enter the time using the HH:MM:SS format.

   c. If needed, repeat Step b for the other option.

   d. Press CANCEL to **backtrack** through the menu hierarchy.

7. If necessary, set **Auto Cleaning** (Default: Disabled):

   a. Select **Configuration > Configure Auto Cleaning**.

   b. Select **Enable Auto Cleaning** or **Disable Auto Cleaning**, and press SELECT.

      NOTE: The Auto Cleaning function can only be enabled if there is at least 1 inactive position in the magazine in the library.

   c. Press SELECT again to **apply** the setting (or CANCEL to reject the setting).

   d. Press CANCEL to **backtrack** through the menu hierarchy.

Populating the Library with Cartridges

The magazine is opened using the Operator Control Panel.

To populate the library with data and cleaning cartridges, complete the following procedure:

1. From the top menu screen on the Operator Control Panel, press DOWN to select **Unlock Magazine**, and press SELECT.
2. Insert cartridges in the magazine.

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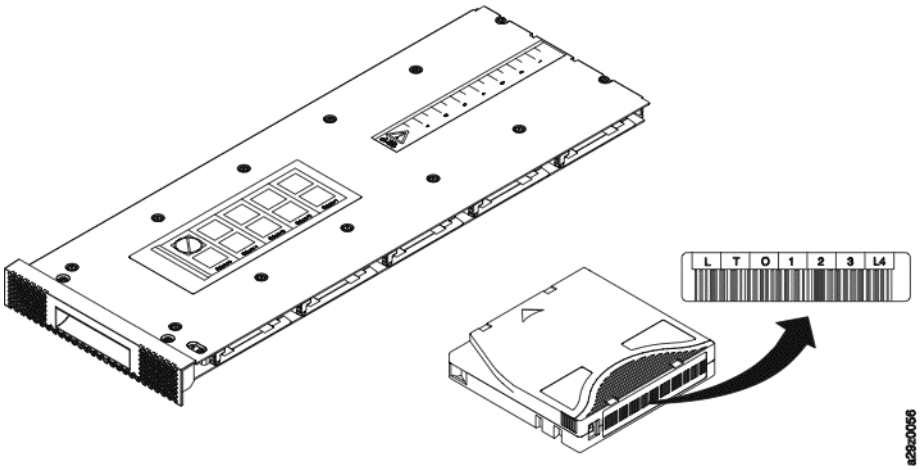
NOTE: A blue release gate (1) in the top left corner of each column in the cartridge magazine prevents each cartridge from falling out of the front of the magazine. When manually releasing the gate with one hand, position your other hand in front of the column opening to prevent cartridges being ejected by the internal column spring.

NOTE: Column 5 Tier 2 is reserved as the exchange position. This position is accessible by the library only. A locking mechanism prevents insertion of a cartridge into the reserved slot.

Each cartridge must be inserted with the indicator arrow on the leading edge of the upper surface of the cartridge pointing towards the cartridge magazine.

NOTE: Do not rely on the bar code label orientation, if attached, to provide an indication of the correct cartridge orientation. The bar code label should be right side up if attached correctly.



The Auto Cleaning function can be enabled only if the number of active slots is less than the maximum available slots. The active slots are always enabled starting with the lowest numerical cartridge position number in the magazine, which is located at the drive end of the cartridge magazine. Place cleaning cartridges in inactive cartridge positions for use by the auto cleaning function.

Do not store data or cleaning cartridges in the Mail Slot (Column 5, Tier 1) if the Mail Slot is enabled.

3. Put the **magazine** back into the library.

   Wait for the library inventory to complete before proceeding to the next step.

4. Press CANCEL to **return** to the top level menu.

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Verifying Library and Drive Operation

To verify the library is operating correctly:

1. From the top menu screen on the Operator Control Panel, press DOWN to select **Service**, and press SELECT.
2. Press DOWN to select **Diagnostics**, and press SELECT.
3. Select **Run Library Verify**, press SELECT, and follow the on-screen instructions.

   If there is a cartridge in a drive, the library moves the cartridge to its home position, or to the Mail Slot if the home position is not known.
4. When prompted, insert a customer-supplied **scratch cartridge** into the Mail Slot.

   When the scratch cartridge is loaded, the bar code reader reads the bar code label on the cartridge and stores it for later comparison. The cartridge is then moved to the tape drive, where the drive runs its own write/read/verify test. When the test is done, the library tells the drive to eject the cartridge, and then the cartridge is moved back to the Mail Slot. The bar code is read again and compared with the value stored earlier.
5. When prompted, remove the **scratch cartridge** from the Mail Slot.

   The result of the test is reported on the Operator Control Panel. If an error occurs, note the error code number and see Appendix B, "Error Codes."
6. Press CANCEL to **return** to the top level menu.

Taking the Library Online

When your library is completely configured, you are ready to save the library configuration and take the library online.

NOTE: The tape drive is always online, regardless of whether the library is online or offline.

To take the library online using the **Operator Control Panel**:

1. From the top menu screen, press DOWN to select **Commands**, and press SELECT.
2. Select **Change Library State**, and press SELECT.
3. Select **Set Library Online**, and press SELECT.
4. Press CANCEL **repeatedly** to return to the top level menu.
5. Press DOWN to select **Logout**, and press SELECT.

To take the library online using the **Web User Interface**:

1. Save the **library configuration**:
   a. Expand Configure Library, if necessary, and click **Save/Restore** in the left navigation pane of the Web User Interface.
   b. Click **Save**, enter a file name, and select a location to save the configuration file.
2. Verify the **library state**:
   a. Click **Library State** in the left navigation pane of the Web User Interface.
   b. If the library is offline, click **Bring Online**.

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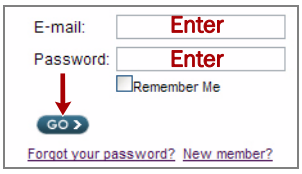
c. Click **Yes** to confirm when prompted.

A message appears when the operation is completed.

3. Click **Logoff** in the top right corner of the window.

Registering for Support Notification

Support Notification registration provides email notification when new firmware levels have been updated and are available for download and installation.



1. Go to http://www.overlandstorage.com/ and select **Service & Support > My Products**.
2. At the Site Login, enter your **e-mail address** and **password**, and click **GO**.
3. Click **Register New Product**.
4. Fill in the information (including serial number) and click **Submit**.

Your warranty certificate will be emailed to you. Follow the instructions included in the email to complete the registration process.

IMPORTANT: Library firmware and tape drive firmware are verified and released together. When updating to the latest firmware, verify that all installed components such as the tape drive and library are at the latest levels noted on the Support web site. Mixing different levels of library and tape drive firmware is not supported and may cause unpredictable results.

Overland Storage recommends that you update library and drive firmware when new levels become available. For instructions on updating library and drive firmware, see "Updating Library and Drive Firmware" on page 4-31.

Now you are ready to use your library.

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Chapter 4

Operations

Topics in Operations:

- Maps of Command Levels
- Using the Operator Control Panel
- Using the Web User Interface

Maps of Command Levels

Operator Control Panel

Use the following map to access the operational functions of this library (levels 1–3) from the front of the library:

- Operator Control Panel
  - Monitoring the Library
    - Viewing Configuration Settings
    - Viewing Current Information
    - Viewing Firmware Revision
  - Managing the Library
    - Unlocking the I/O Station [Mail Slot]
    - Unlocking the Cartridge Magazine
    - Moving Cartridges
    - Unloading the Drive
    - Cleaning the Drive Manually
    - Conducting a Library Inventory
    - Taking the Library Online/Offline
    - Powering Down the Library
    - Preparing to Ship the Library
    - Rebooting the Drive
    - Rebooting the Library
    - Logging Out of the Library
  - Configuring the Library
    - Configuring Auto Cleaning
    - Configuring the Number of Active Slots
    - Configuring the Library Access Mode

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- Configuring Date and Time Settings
- Configuring Network Settings
- Configuring Operator Control Panel Settings
- Setting the Library to Factory Defaults

- Servicing the Library
  - Checking the Library Error Status
  - Running Library Verify Diagnostics
  - Running Drive Diagnostics

Web User Interface

Use the following map to access the operational functions of this library (levels 1–3) remotely using a web browser:

- Web User Interface
  - Monitoring the Library
    - Viewing the System Summary
    - Viewing the Library Map
  - Managing the Library
    - Moving Cartridges
    - Unloading Drive
    - Cleaning the Drive Manually
    - Taking the Library Online and Offline
    - Conducting a Library Inventory
  - Configuring the Library
    - Managing User Access
    - Configuring Physical Library Settings
    - Configuring Logical Library Settings
    - Configuring Network Settings
    - Configuring Date and Time Settings
    - Configuring Email Notifications
    - Configuring SNMP Trap Notifications
    - Saving and Restoring Configuration Settings
  - Servicing the Library
    - Viewing Operator Interventions
    - Viewing Library Logs
    - Viewing Trace Data
    - Downloading Drive Logs
    - Downloading Library Logs
    - Resetting the Library and Drives
    - Updating Library and Drive Firmware
    - Viewing Accessor Statistics

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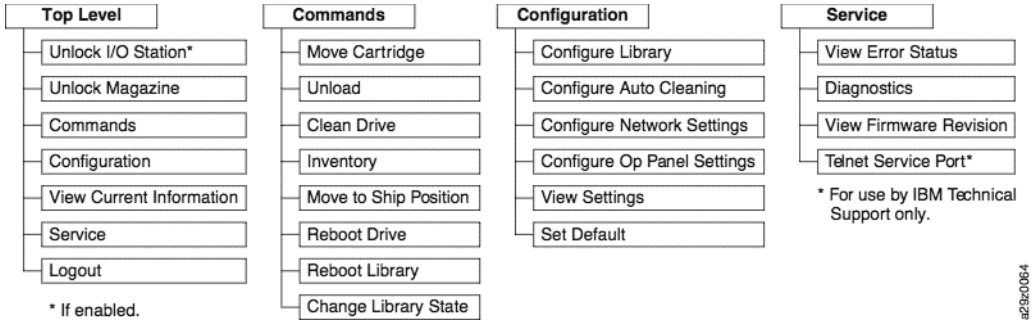
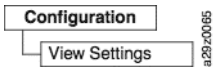
Using the Operator Control Panel

The chart below shows the top level menu tree structure of the Operator Control Panel on the front of the NEO 100s library. For details on how to select commands and options, see the descriptions in this section.



Monitoring the Library

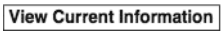
Viewing Configuration Settings



Use **Configuration > View Settings** to display a list of the library configuration settings:

- Library settings
  - I/O Station (Mail Slot On/Off)
  - Auto cleaning (On/Off)
  - Number of cleaning slots when Auto cleaning is enabled
  - Operator Control Panel back light setting
- Network settings
  - Link speed
  - IP address protocol
  - IPv4 settings (IP address, subnet mask address, gateway address, DHCP)
  - IPv6 settings (IP address, gateway address, prefix length, DHCP, stateless Auto configuration)
- Drive settings
  - Model number

Viewing Current Information



Use **View Current Information** to display the network settings information.

The settings displayed comprises the following:

- Network settings
  - Worldwide node name
  - IP address protocol stack
  - IP address

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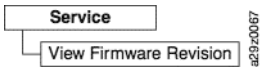
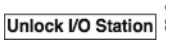
Viewing Firmware Revision



Use **Service > View Firmware Revision** to display the current version of the library firmware.

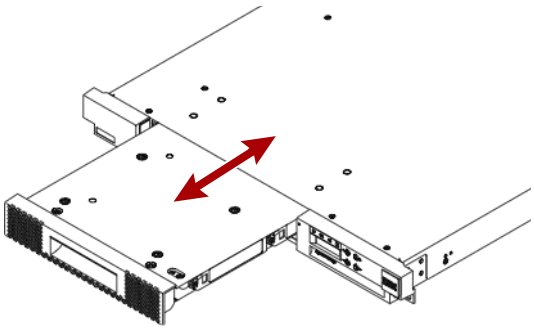
Managing the Library

Unlocking the Mail Slot (I/O Station)



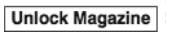
Use **Unlock I/O Station** to unlock the Mail Slot.

NOTE: This menu option is available only when the Mail Slot is enabled in the library configuration settings.



After closing the Mail Slot, wait for the library to complete its inventory before proceeding with normal library operations.

Unlocking the Cartridge Magazine



Use **Unlock Magazine** to unlock and remove the cartridge magazine.

IMPORTANT: A blue release gate in the top left corner of each column in the cartridge magazine prevents each cartridge from falling out of the front of the magazine. When manually releasing the gate with one hand, position your other hand in front of the column opening to prevent cartridges being ejected by the internal column spring.

When the cartridge magazine is unlocked, it can be removed from the library (using two hands to support it) to insert and/or remove data and cleaning cartridges. When the cartridge magazine is fully inserted, the magazine locks into place.

After closing the magazine, wait for the library to complete its inventory before proceeding with normal library operations.

NOTE: A blue release gate in the top left corner of each column in the cartridge magazine prevents each cartridge from falling out of the front of the magazine. When manually releasing the gate with one hand, position your other hand in front of the column opening to prevent cartridges being ejected by the internal column spring.

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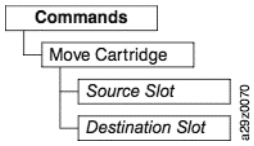
Moving Cartridges



Use **Commands > Move Cartridge** to move data cartridges and cleaning cartridges between the Mail Slot, storage positions, and a tape drive.

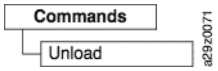
Specify the following parameters:

- **Source Slot** – Specify a source that contains a cartridge.
- **Destination Slot** – Specify the destination.

Press SELECT to move the cartridge from the source to the destination.

NOTE: Cartridges cannot be moved to the Accessor using this command, but can be moved from the Accessor using this command if, for example, the library was powered OFF with a tape still held in the Picker.

Unloading the Drive



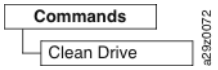
Use **Commands > Unload** to unload the cartridge from the tape head mechanism.

Unload when library is in Random mode: The cartridge in the drive is unloaded from the tape head mechanism, but is still retained inside the tape drive housing. The Move Cartridge command moves the cartridge from the drive to another location. Moving a tape cartridge from a drive to another location both unloads and moves the cartridge in a single action.

Unload when library is in Sequential mode: The cartridge in the drive is unloaded from the tape head mechanism, and returned to the cartridge home position.

Press SELECT to unload the cartridge from the tape head mechanism.

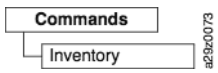
Cleaning the Drive Manually



Use **Commands > Clean Drive** to clean the tape drive manually using a cleaning cartridge located in either a cartridge storage position or the Mail Slot.

Press SELECT to move the cleaning cartridge to the drive and start drive head cleaning. The cleaning cartridge is returned to its home position when cleaning is finished.

Conducting a Library Inventory



Use **Commands > Inventory** to force the library to execute an inventory of the cartridge magazine, accessor, and tape drive to refresh the library map. An inventory is conducted automatically when power is first turned ON or when the cartridge magazine is removed and reinserted.

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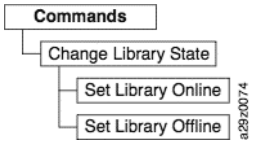
Press SELECT to conduct the inventory.

Taking the Library Online/Offline



Use **Commands > Change Library State** to take the library online or offline.

It is sometimes necessary to take the library offline before performing some servicing functions for the library. Once these operations have finished, it is necessary to bring the library back online.

NOTE: The tape drive is always online, even when the library is offline.

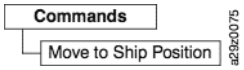
Powering Down the Library

Before powering OFF the library, make sure that the library is in an idle state with no mechanical movement of the Accessor, and all data operations (for example, backup operations, accessing of log files, and so on) have completed. Then, power OFF the library using the power switch on the rear panel of the library.

CAUTION: If you switch the library power OFF while the library is being accessed, loss of data may occur.

NOTE: When power cycling the library, wait 10 seconds after the power is OFF before powering ON again.

Preparing to Ship the Library



Use **Commands > Move to Ship Position** when preparing to move the library to a new location. The Accessor must be placed in a parked position within the library housing. Move to Ship Position finishes all active commands received from the host application, does not process any new commands, and moves the Accessor to the parked position before the power is turned OFF.

1. When Unlock Magazine is displayed, press SELECT to unlock the cartridge magazine. The magazine will unlock and the display will prompt the removal of the magazine.
2. Remove all cartridges from the magazine and reinsert the magazine into the slide mechanism. The library will perform an inventory to verify no cartridges are in the magazine.
3. If the magazine is empty, the library will move the accessor to the ship position. At this point, the library can be powered down. If the magazine is NOT empty, the library will prompt to remove cartridges. After removing all cartridges and replacing the magazine, start the ship position process again.

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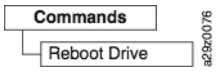
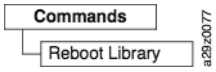
Rebooting the Drive



Use **Commands > Reboot Drive** to force the drive to reboot. You also specify whether the library should come online/offline after it finishes rebooting.

Press SELECT to reboot the drive.

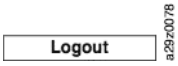
Rebooting the Library



Use **Commands > Reboot Library** to force the library to reboot. You also specify whether the library should come online or offline after it finishes rebooting.

Press SELECT to reboot the library.

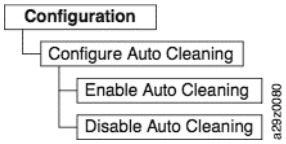
Logging Out of the Library



Use Logout to logout of the library. The login screen is displayed for the next user.

Configuring the Library

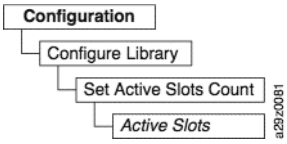
Configuring Auto Cleaning



Use **Configuration > Configure Auto Cleaning** to enable or disable automatic head cleaning of the tape drive in the library.

The drive can also be cleaned manually. For details, see "Cleaning the Drive Manually" on page 4-5.

Configuring the Number of Active Slots



Use **Configuration > Configure Library > Set Active Slots Count** to set the number of active data cartridge positions within the logical library.

NOTE: The maximum number of active slots that can be set is dependent upon the Mail Slot configuration and Auto Cleaning setting.

The active cartridge slots always begin with the cartridge position with the lowest cartridge address within the logical library.

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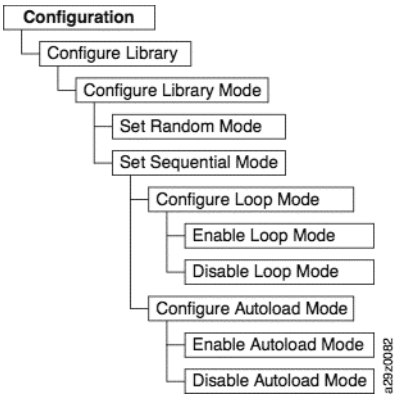
Configuring the Library Access Mode



Use **Configuration > Configure Library > Configure Library Mode** to set the logical library access mode.

Configure the library access mode using the following settings:

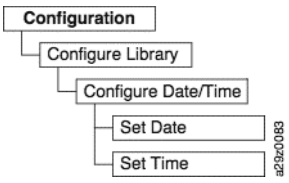
- **Random Mode** – In random mode, the library allows the server's (host's) application software to select any data cartridge in any order.
- **Sequential Mode** – In sequential mode, the library's firmware predefines the selection of the cartridges. After initialization, the firmware causes the library to select the first available cartridge found (counting from the lowest Column/Tier position through the highest cartridge position in your library) for loading into the drive.
  - **Loop** – Sequential mode with loop mode ON loads the cartridge in the lowest Column/Tier cartridge position after the cartridge in the highest Column/Tier cartridge position has been filled with data and sent back to its home position. This allows endless backup operations without user interaction.
  - **Autoload** – Sequential mode with autoload mode ON loads the first available cartridge (the lowest Column/Tier cartridge position that contains a cartridge) automatically if the library powers ON, or resets, with an empty drive. If the library powers ON with a cartridge already in the drive, sequential mode will start from the home position of that cartridge, unless the host issues a rewind and unload command to the drive, in which case the next cartridge in sequence will be loaded into the drive.

  To start sequential mode if autoload is OFF, use the Move Cartridge command to load the first cartridge into the drive. The sequence starts from the home position of that cartridge. Cartridges need not be in contiguous slots.

  To stop sequential mode, use the Move Cartridge command to unload the drive. This cancels sequential mode; the next sequential cartridge is NOT loaded.

  To restart sequential mode, use the Move Cartridge command again to load a cartridge; the loading sequence will resume from the home position of that cartridge.

Configuring Date and Time Settings



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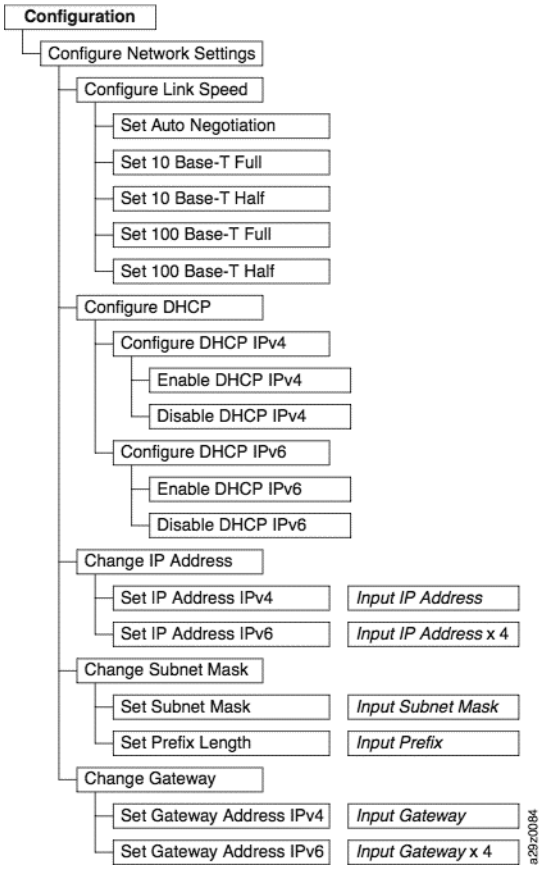
Use **Configuration > Configure Library > Configure Date/Time** to set the date and time on your library manually after a power disruption and when daylight savings time starts and ends. The date is set in MM/DD/YYYY format, and the time is set in 24-hour HH:MM:SS format.

The current date and time can also be controlled automatically using a network-based Network Time Protocol (NTP) server.

Configuring Network Settings



Use **Configuration > Configure Network Settings** to set the network settings for the library.

NOTE: The internet protocol (IPv4, IPv6 or dual IPv4/IPv6) selection is used for the NEO 100s library IP address, subnet mask, gateway address, time server address, mail server address, SNMP trap address, and EKM server addresses.

Configure the network using the following settings:

- **Link Speed** – Ethernet duplex mode (Auto, 10BASE-T Full, 10BASE-T Half, 100BASE-TX Full, 100BASE-TX Half).
- **DHCP** – (Dynamic Host Configuration Protocol) Enable DHCP to have the library server or router negotiate the connection with the library.
  - **IPv4** – Select to enable DHCP using the IPv4 protocol.
  - **IPv6** – Select to enable DHCP using the IPv6 protocol
- **IP Address** – If DHCP is disabled, set the IP address of the library manually.
  - **IPv4** – Select to enter the library IP address using the IPv4 protocol.
  - **IPv6** – Select to enter four library IP addresses using the IPv6 protocol.

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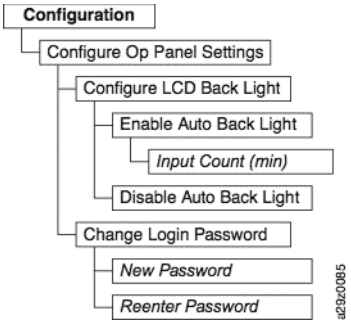
- **Subnet Mask** – If DHCP is disabled, set the IP address of the subnet mask.
  - **Subnet Mask** – Select to enter the subnet mask address using the IPv4 protocol.
  - **Prefix Length** – Select to enter the prefix length for the IPv6 protocol.
- **Gateway** – If DHCP is disabled, set the IP address of the gateway.
  - **IPv4** – Select to enter the gateway IP address using the IPv4 protocol.
  - **IPv6** – Select to enter four gateway IP addresses using the IPv6 protocol.

Configuring Operator Control Panel Settings

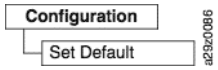


Use **Configuration > Configure Op Panel Settings** to set the preferences when using the Operator Control Panel.

Configure the Operator Control Panel using the following settings:

- **Back light** – Select to enable the LCD back light when using the Operator Control Panel.
  - **Input Count** – If the auto back light is enabled, specify the time duration before the back light turns OFF. The setting uses a 4-digit timer in minutes.
- **Login Password** – Select to change the Operator Control Panel 4-character login password. The new password must be re-entered for confirmation before the password is changed (default: 0000).

Setting the Library to Factory Defaults



Use **Configuration > Set Default** to reset the library to the factory default settings. See "Library Default Settings" on page 3-6. The date and time must be reset after restoring factory default settings. See "Configuring Date and Time Settings" on page 4-8.

IMPORTANT: This configuration setting deletes all current library settings, and should be used with utmost caution.

To restore your library configuration, see "Saving and Restoring Configuration Settings" on page 4-25.

Servicing the Library

The Service menu on the Operator Control Panel gives access to troubleshooting and maintenance diagnostic tools.

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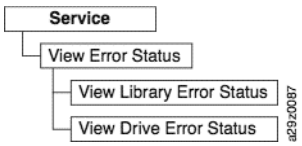
Checking the Library Error Status

This graphic illustrates the error status menu.



Use **Service > View Error Status** to check the current status of the major library components.

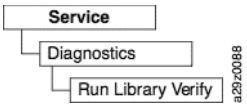
Select the component to view its error status:

- **Library** – Checks the error status of the library.
- **Drive** – Checks the error status of the tape drive.

If an error occurs, press the Enter key to display specific error information. You can check the meaning of error codes in Appendix B, "Error Codes."

Running Library Verify Diagnostics

This graphic illustrates the Library Verify diagnostics.



Use **Service > Diagnostics > Run Library Verify** to test the library and drive hardware, communications, and the read/write capability of the library.

IMPORTANT: Library Verify is the most critical and most frequently used test, and should be executed after all maintenance procedures to ensure correct library performance.

NOTE: Running the Library Verify diagnostic test will unload tape cartridges in the drives if the host application has not already done so.

To run library verification diagnostic tests:

1. Select **Run Library Verify**, and press **Enter**. Follow the on-screen instructions.

   If there is a cartridge in the drive, the library moves the cartridge to its home position, or to the I/O Station if the home position is not known.

2. When prompted, insert a **scratch cartridge** into the Mail Slot.

   When the scratch cartridge is loaded, an inventory is conducted and the bar code reader reads the bar code label on the cartridge and stores it for later comparison. The scratch cartridge is then moved to the tape drive, where the drive runs its own write/read/verify test. When the test is done, the library tells the drive to eject the scratch cartridge, and then the cartridge is moved back to the I/O Station. The bar code is read again and compared with the value stored earlier.

3. When prompted, remove the scratch cartridge from the **Mail Slot**.

   The result of the test (PASSED or error message) is reported on the Operator Control Panel.

4. View the **Error Log** to check if any errors occur.

   If an error occurs, see Appendix B, "Error Codes," to identify and locate the problem.

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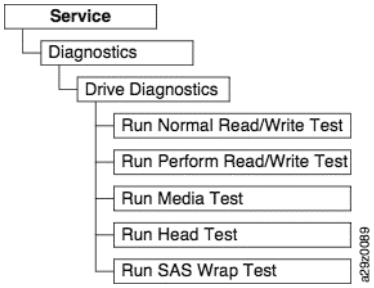
Running Drive Diagnostics

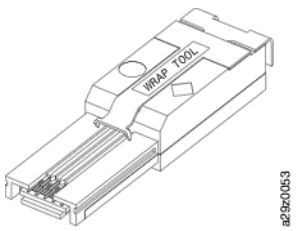
This graphic illustrates the drive diagnostics.



Use **Service > Diagnostics > Drive Diagnostics** to run various drive-related diagnostic tests.

To run drive diagnostic tests:

1. Select **Drive Diagnostics**, and press **Enter**.
2. Select one of the **diagnostic tests** and follow the on-screen instructions.
   - **Normal R/W Test** – Runs a shortened version of the Performance R/W Test. It does not include the POST diagnostic, calibrate drive, or unique tape motion tests. It checks the motors and head by running read/write tests on a shortened section of tape, both inbound and outbound. Takes approximately 4 minutes (if no error occurs) to 9 minutes (if calibration is required).
   - **Perform R/W Test** (Performance R/W Test) – Runs most of the tests that normally occur when the library is powered ON (POST). When prompted, load a CE scratch cartridge to run the calibrate drive, read/write, and tape motion tests. These tests calibrate the read/write channel to optimum settings, run a long read/write test using all servo positions, and exercise all of the tape motion functions of the drive. Takes up to 30 minutes.
   - **Media Test** – Runs tests on a tape cartridge. When prompted, insert the cartridge to test into the I/O Station. This test overwrites any data on the cartridge. It runs read/write tests on the outer tracks of the tape to verify the media tracking and performance. Takes approximately 9 minutes.
   - **Head Test** – Runs read/write tests on the tape drive head. When prompted, insert a scratch cartridge into the I/O Station. It runs read/write tests on the inner tracks of the tape to verify the head performance. Takes approximately 6 minutes.
   - **SAS Wrap Test** – Runs tests on the SAS interface SCSI controller. Remove the SAS cable from the library and insert the SAS wrap tool into the SAS host connector. Start the SAS wrap test. If the wrap test fails, contact your next level of support.



3. When prompted, insert a **scratch cartridge** into the Mail Slot.

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4. When prompted, remove the scratch cartridge from the **Mail Slot**.

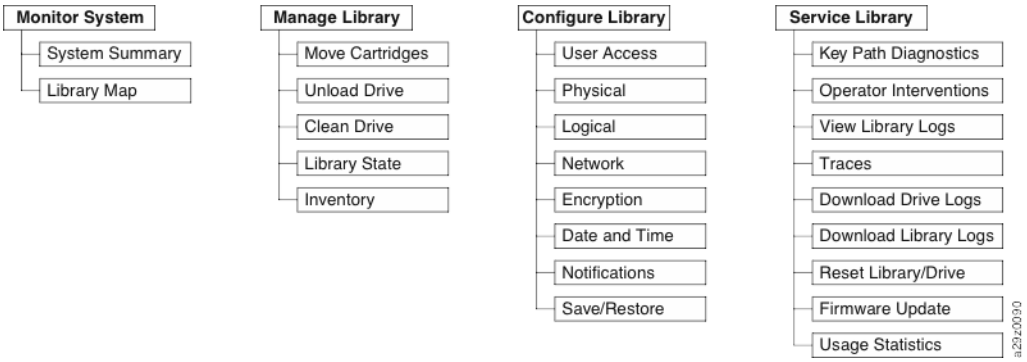
   The result of the test (PASSED or error message) is reported on the Operator Control Panel.

5. View the Error Log to check if any errors occur.

   If an error occurs, see Appendix B, "Error Codes," to identify and locate the problem.

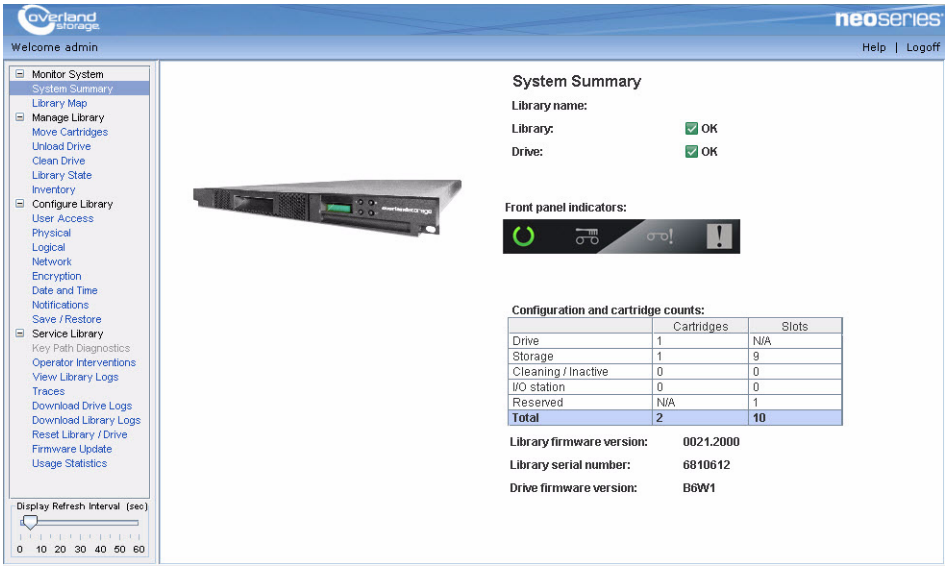
Using the Web User Interface

This graphic shows all the menu options available from the Web User Interface for the Administrator User account. For information on the menu user access privileges for User, Superuser, and Administrator accounts, see "User Privileges" on page 2-6.



Monitoring the Library

Viewing the System Summary



Use **Monitor Library > System Summary** to display a summary of the current status of the tape drive and the library, and the current configuration of the library, comprising:

- Library name
- Library status (OK, Degraded, or Failed). It displays Not Ready while initializing.

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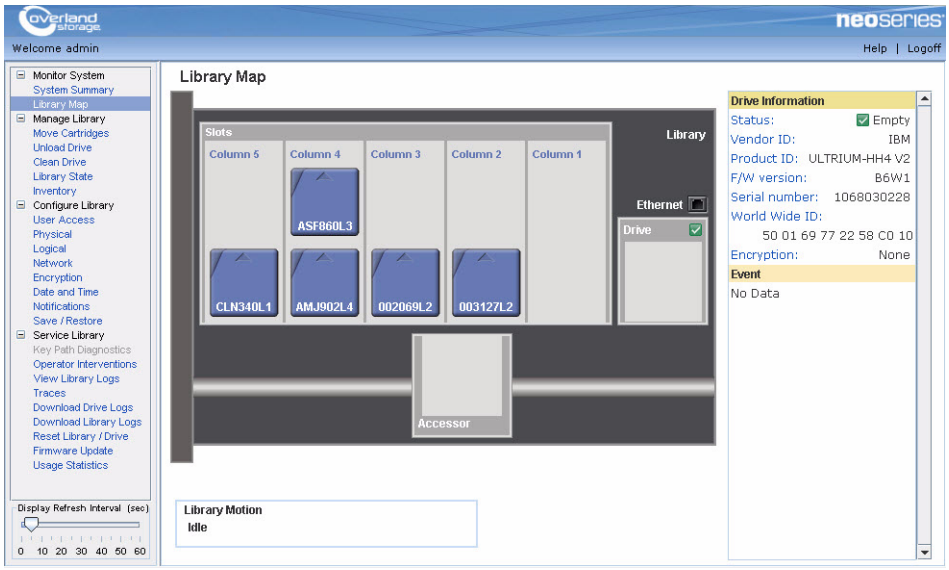
- Drive status (OK, Degraded, or Failed). It displays Empty, Loading, or Ejected when the drive is empty, loading media, or media is ejected/unloaded in the drive. It displays Cleaning when the cleaning cartridge is in the drive, and Initializing while initializing.
- Mail Slot status (Open/Closed, when Mail Slot is enabled)
- Operator Control Panel LED indicators
- Number of cartridges and slot configuration
  - Cartridge in the drive (0 or 1); Slots value is always N/A
  - Number of cartridges in the active slots; Number of active slots
  - Number of cartridges in the cleaning/inactive slots; Number of cleaning/inactive slots
  - Number of cartridges in the Mail Slot (0 or 1) when enabled; Number of Mail Slot slots
  - Number of cartridges in the reserved slot; Number of reserved slots
- Library firmware version
- Library serial number
- Drive firmware version

Viewing the Library Map



Use **Monitor Library > Library Map** to display a graphical view of the library. Each component of the library is represented by a clickable icon. Select a component in the library map to display detailed information for that component of the library on the right side of the page. A grayed out column represents the Mail Slot. The information displayed varies according to the type of device selected:

- Library information
  - Accessor status (OK, Degraded, or Failed)
  - Drive Status (OK, Degraded, or Failed). Drive Status displays Empty, Loading, or Ejected when the drive is empty, loading media, or media is ejected/unloaded in the drive. It displays Cleaning when the cleaning cartridge is in the drive, and Initializing while initializing.

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- Mail Slot (Enabled or Disabled)
- Auto cleaning (Enabled or Disabled)
- Magazine status (Inserted or Open)
- Library mode (Random or Sequential). In Sequential mode, Loop and Auto load mode are also displayed.

- Ethernet information
  - Status
  - Protocol
  - IP addresses
  - DHCP (Enabled or Disabled)
  - Subnet mask
  - Gateway address
  - Library Worldwide node name
  - MAC address
  - Link speed
  - NTP server
  - SNMP trap
  - Email address
- Cartridge
  - Cartridge label detected by the bar code reader
  - Media status (OK, Degraded, or Failed)
  - Remaining uses for cleaning cartridges. When a cleaning cartridge is added to the library (Mail Slot or cleaning slot) the remaining uses will be displayed as 50. The actual remaining uses will be updated when the cleaning cartridge is loaded into the tape drive. See "Cleaning Cartridge" on page 5-4.
- Column *n*, Tier *n*
  - Slot type (Storage, I/O Station, or Cleaning)
  - Element address
- Drive information
  - Status (OK, Degraded, or Failed). Drive Status displays Empty, Loading, or Ejected when the drive is empty, loading media, or media is ejected/unloaded in the drive. It displays Cleaning when the cleaning cartridge is in the drive, and Initializing while initializing.
  - Vendor ID
  - Product ID
  - Firmware version
  - Serial number
  - World wide node name
  - Drive event
  - Cartridge information
- Accessor information
  - Status (OK, Degraded, or Failed)
  - Accessor event

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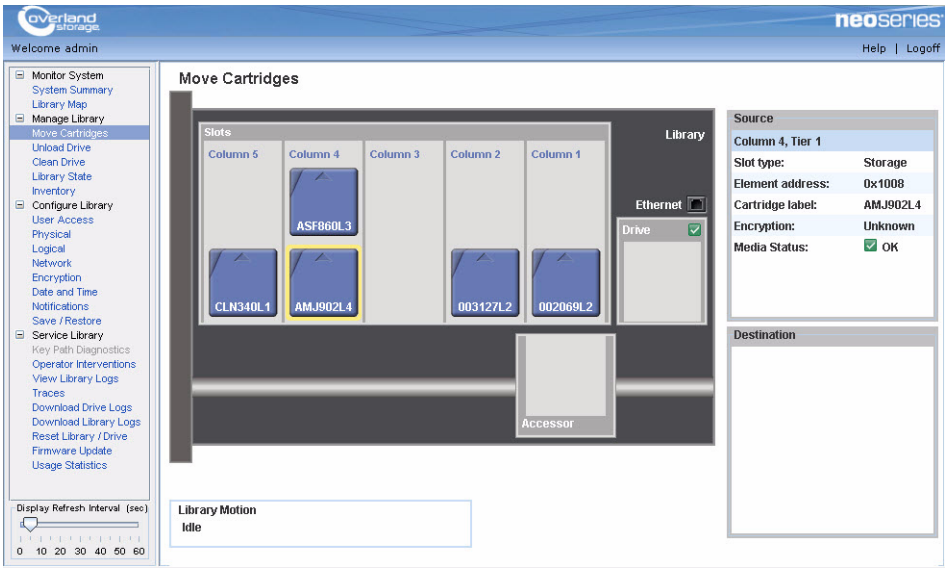
Managing the Library

Moving Cartridges



Use **Manage Library > Move Cartridges** to move data and cleaning cartridges between the Mail Slot, storage positions, inactive slots, and tape drive. Move cartridges by clicking and dragging a cartridge from one location to another, or by right-clicking a cartridge and selecting a destination.

Select a cartridge to display information for that cartridge in the Source pane on the right side of the page. Drag the cartridge to a valid destination location to display information in the Destination pane. Release the mouse button to execute the move.

The following information is displayed:

- Source
  - Location coordinates in the library (Column, Tier)
  - Slot type (Storage, I/O Station, or Cleaning)
  - Element address
  - Cartridge label
  - Remaining uses for cleaning cartridges. When a cleaning cartridge is added to the library (Mail Slot or cleaning slot) the remaining uses will be displayed as 50. The actual remaining uses will be updated when the cleaning cartridge is loaded into the tape drive. See "Cleaning Cartridge" on page 5-4.
  - Media status (OK, Degraded, or Failed)
- Destination
  - Location coordinates in the library (Column, Tier)
  - Status (for the tape drive)
  - Slot type and element address

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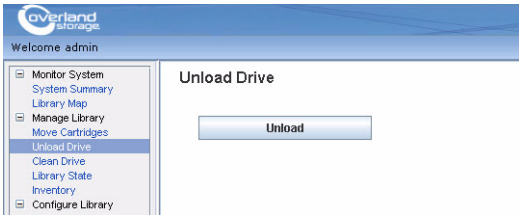
NOTE: Each column has a spring loaded mechanism that pushes the cartridges into Tier 1. Moving a second cartridge into a column moves the first cartridge into Tier 2. Also, cartridges cannot be moved directly from Tier 1 in one column to Tier 2 in another column in a single move operation (intermediate move operations are required).

Cartridges cannot be moved to the Accessor using this command, however, but can be moved from the Accessor using this command if, for example, the library was powered OFF with a cartridge still held in the Accessor.

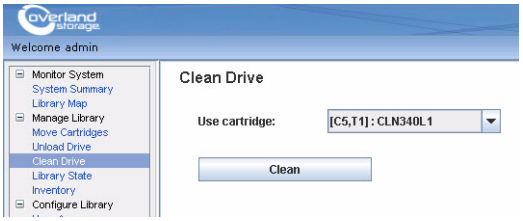
Unloading Drive



Use **Manage Library > Unload Drive** and click Unload to unload the tape cartridge from the tape drive head.

- Unload when library is in **Random** mode – The cartridge in the drive is unloaded from the tape head mechanism, but is still retained inside the tape drive housing. The Move Cartridge command moves the cartridge from the drive to another location. Moving a tape cartridge from a drive to another location both unloads and moves the cartridge in a single action.
- Unload when library is in **Sequential** mode – The cartridge in the drive is unloaded from the tape head mechanism, and returned to the cartridge home position

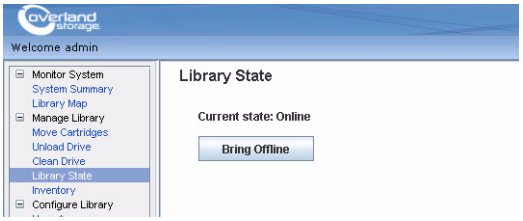
Cleaning the Drive Manually



Use **Manage Library > Clean Drive** to clean a drive manually. Select a cleaning cartridge to use (from the magazine or from the Mail Slot), and click Clean.

The cleaning cartridge is returned to its home position when cleaning is finished.

Taking the Library Online and Offline



Use **Manage Library > Library State** to take the library online or offline. Check the current library status, and click the button displayed to change the library status.

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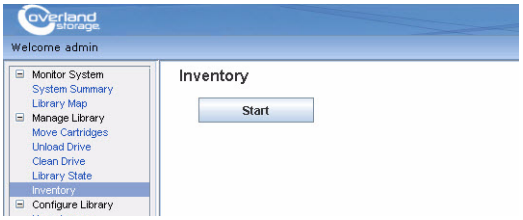
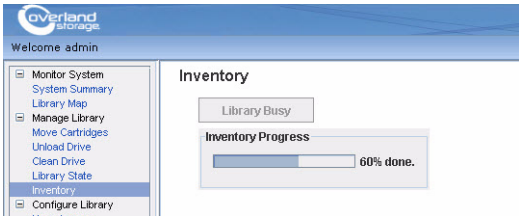
It is sometimes necessary to take the library offline before performing some servicing functions for the library. Once these operations have finished, it is necessary to bring the library back online.

NOTE: The tape drive is always online, even when the library is offline.

Conducting a Library Inventory



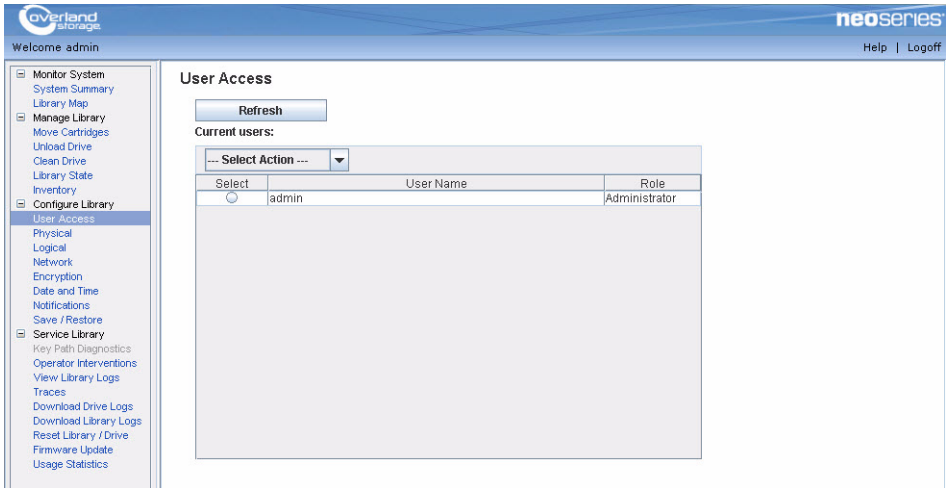
Use **Manage Library > Inventory** to force the library to execute an inventory of the cartridge magazine, accessor, and tape drive to refresh the library map. Conduct an inventory by clicking the Start button. The status changes to Library Busy and an Inventory Progress bar indicates the process in action. Wait until the operation finishes before resuming normal library operations.



An inventory is conducted automatically when the power is first turned ON or when a cartridge magazine is inserted.

Configuring the Library

Managing User Access



Use **Configure Library > User Access** to add, modify, or remove additional administrator, superuser, and user accounts, and to change passwords. Up to 7 users can be configured using the Web User Interface.

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Add, modify, or remove users using the following information:

- Select action:
  - **Add** – To add new users.
  - **Modify** – To change the selected user's access role and/or password.
  - **Remove** – To delete the selected user from the system.
- **User Name** – The user name of a registered user.
- **Password** – Case-sensitive password for the registered user.
- **Role** – The user access level for the registered user.
  - **Users** are allowed to monitor the library, but not perform actions that affect the physical library.
  - **Superusers** are allowed to operate the physical and logical library, but not perform actions that affect the library configuration.
  - **Administrator** users are allowed access to the entire physical library and logical library, including configuration. One and only one administrator user must be assigned the login name admin.

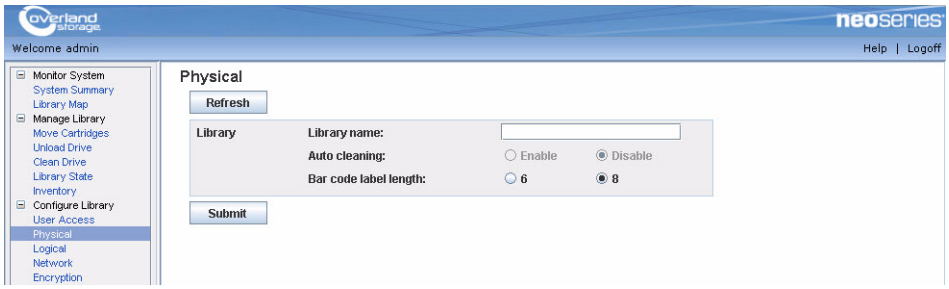
An administrator can add/modify/remove additional administrator, superuser, and user accounts, and change passwords. User accounts are restricted to specific areas of the library. For more information, see "User Privileges" on page 2-6.

A User account can be modified by an administrator to provide a user with superuser or administrator access permissions to the library functions.

Click Submit to transfer the settings to the library. A dialog message is displayed when the settings have been updated successfully.

Click Refresh to read the current settings from the library.

Configuring Physical Library Settings



Use **Configure Library > Physical** to configure the Mail Slot and auto cleaning.

Configure the Mail Slot and auto cleaning cartridge slot assignment using the following settings:

- **Library name** – Use to enter a name for your library.
- **Auto cleaning** – Use to enable automatic cleaning of the tape drive. Auto cleaning can be enabled only when there the number of active slots is less than the total number of available slots in the library.
- **Bar code label length** – Use to choose the number of characters in the cartridge bar code that is reported to the host computer.

Click Submit to transfer the settings to the library. A dialog message is displayed when the settings have been updated successfully.

Click Refresh to read the current settings from the library.

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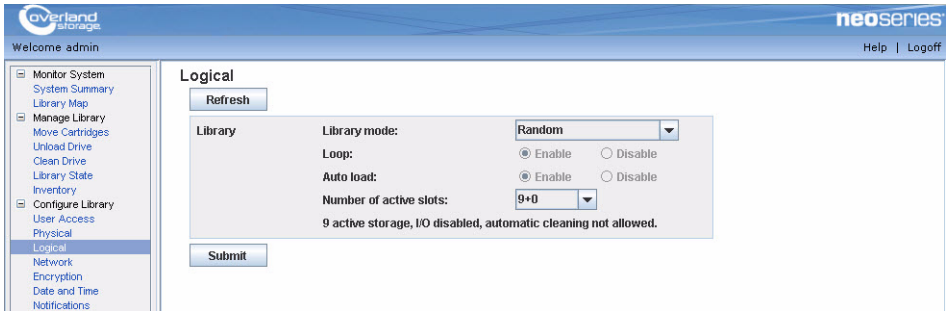
Configuring Logical Library Settings



Use **Configure Library > Logical** to configure the library access mode for the logical library and the number of active cartridge slots.

Configure the library access mode using the following settings:

- **Library mode** – The library mode can be set to Random or Sequential.
  - **Random** – In random mode, the library allows the server's (host's) application software to select any data cartridge in any order.
  - **Sequential** – In sequential mode, the library's firmware predefines the selection of the cartridges. After initialization, the firmware causes the library to select the first available cartridge found (counting from the lowest Column/Tier position through the highest cartridge position in your library) for loading into the drive. See "Location Coordinates and Element Addresses" on page 1-8.
    - **Loop** – Sequential mode with loop mode ON loads the cartridge in the lowest Column/Tier cartridge position after the cartridge in the highest Column/Tier cartridge position has been filled with data and sent back to its home position. This allows endless backup operations without user interaction.
    - **Autoload** – Sequential mode with autoload mode ON loads the first available cartridge (the lowest Column/Tier cartridge position that contains a cartridge) automatically if the library powers ON, or resets, with an empty drive. If the library powers ON with a cartridge already in the drive, sequential mode will start from the home position of that cartridge, unless the host issues a rewind and unload command to the drive, in which case the next cartridge in sequence will be loaded into the drive.

  To start sequential mode if autoload is OFF, use the Move Cartridges command to load the first cartridge into the drive. The sequence starts from the home position of that cartridge. Cartridges need not be in contiguous slots.

  To stop sequential mode, use the Move Cartridges command to unload the drive. This cancels sequential mode; the next sequential cartridge is NOT loaded.

  To restart sequential mode, use the Move Cartridges command again to load a cartridge; the loading sequence will resume from the home position of that cartridge.
- **Number of active slots** – Select the number of active slots you would like to assign in your library. Selecting the number of active slots defines the number of storage slots, number of cleaning/inactive slots, whether the Mail Slot is enabled/disabled, and whether auto cleaning is allowed.

  The first digit configures the number of active storage positions (4, 6, 8, or 9). The second digit configures Column 5, Tier 1 of the magazine as an Mail Slot (0 when disabled, and 1 when enabled).

  The Auto Cleaning function can be enabled only if there is at least 1 inactive position in the magazine. If Auto Cleaning is enabled, the inactive positions become cleaning cartridge positions.

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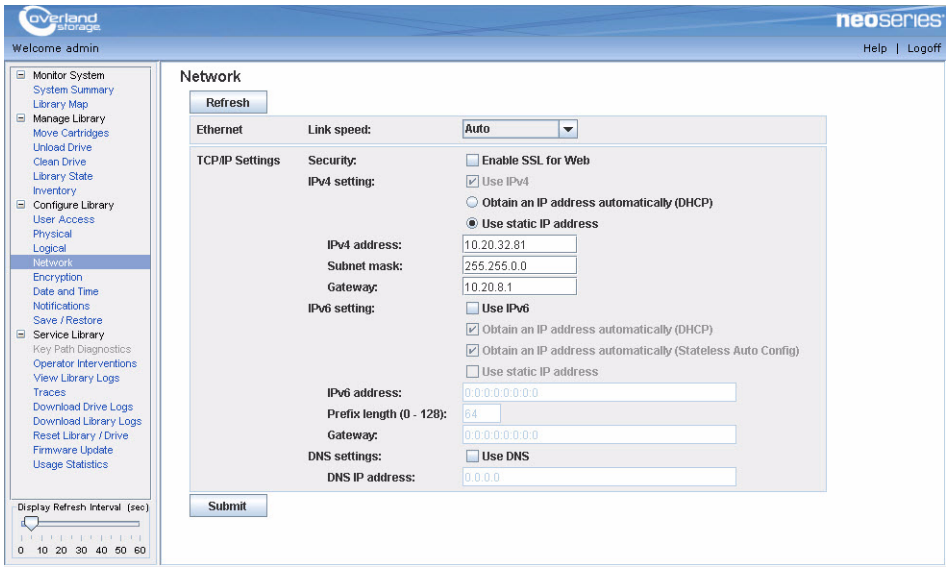
Click Submit to transfer the settings to the library. A dialog message is displayed when the settings have been updated successfully.

Click Refresh to read the current settings from the library.

Configuring Network Settings



Use **Configure Library > Network** to set the network settings for the library.

NOTE: The internet protocol (IPv4, IPv6 or dual IPv4/IPv6) selection is used for the NEO 100s library IP address, subnet mask, gateway address, time server address, mail server address, SNMP trap address, and EKM server addresses.

Configure the network using the following settings:

- **Link speed** – Ethernet duplex mode (Auto, 10Base-T Full, 10Base-T Half, 100Base-TX Full, 100Base-TX Half).
- **TCP/IP settings** – IPv4, IPv6, and dual stack IPv4/IPv6 are supported. To enable the dual IPv4/IPv6 protocol, select both Use IPv4 and Use IPv6 and enter parameters for both.
- **Security** – Select Enable SSL for Web to provide secure communications between the web browser and the tape library.
- **IPv4 setting** – Select Use IPv4 to enable the IPv4 Internet Protocol. Select the corresponding radio button to obtain an IP address automatically (DHCP) or use static IP address settings. When using DHCP, use the Operator Control Panel to determine the library's assigned IP address. See "Viewing Current Information" on page 4-3. Enter the following parameters if using static IP address settings.
  - **IPv4 address** – Sets the TCP/IPv4 address of the library on the network.
  - **Subnet mask** – Defines and limits users within a local network.
  - **Gateway** – Allows access outside the local network.
- **IPv6 setting** – Select Use IPv6 to enable the IPv6 Internet Protocol. Select the corresponding check boxes to obtain an IP address automatically (DHCP), to obtain an IP address using stateless auto configuration, or use static IP address settings. Enter the following parameter if using static IP address settings.
  - **IPv6 address** – Sets the TCP/IPv6 address of the library on the network.

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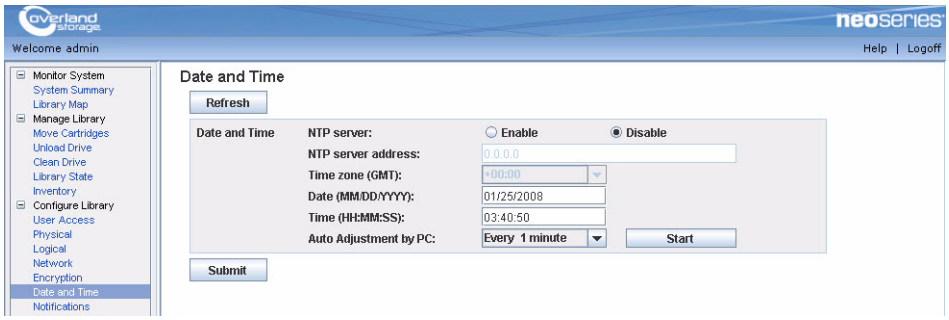
- **Prefix Length** – Decimal value between 0 and 128 indicating the number of contiguous, high-order bits comprising the network portion of the address.
- **Gateway** – Allows access outside the local network.

- **DNS setting** – Select Use DNS to use a domain name server. The DNS server, if entered, allows the date and time and notifications IP addresses to be specified using hostnames instead of numerical IP addresses.
  - **DNS IP address** – Sets the IP address of the DNS server.

Click Submit to transfer the settings to the library. A dialog message is displayed when the settings have been updated successfully.

Click Refresh to read the current settings from the library.

Configuring Date and Time Settings



Use **Configure Library > Date and Time** to configure the date and time settings using one of three methods. The date and time can be automatically updated using a remote NTP time server over the network. Alternatively, the date and time can be synchronized with the clock on your host computer. And lastly, that date and times can be set manually.

NOTE: Selecting the Refresh button will refresh the date and time. If you choose to manually set your date and time, you will need to reset the date and time after power cycling the library and after a library reset. When power cycling the library, wait 10 seconds after the power is OFF before powering ON again.

The NEO 100s library communicates with an NTP server with the following conditions:

- Client-server basis operation
- UDP (User Datagram Protocol) to access the NTP server
- Does not use authentication keys
- Library polling is every 12 hours

Configure the date and time using the following settings:

- **NTP Server** – Enables time and date control using a time server on the network.
  - **NTP server address** – The IP address of the time server. IPv4 and IPv6 addresses are supported, depending on the TCP/IP settings. Hostnames can be entered instead of numerical IP addresses if Use DNS is selected in the Network settings.
  - **Time zone** – The time zone relative to Greenwich Mean Time (GMT).

  If the NTP server is disabled, enter the local time and date **manually**:
  - **Date** – The date using the MM/DD/YYYY format.
  - **Time** – The time using the HH:MM:SS format.

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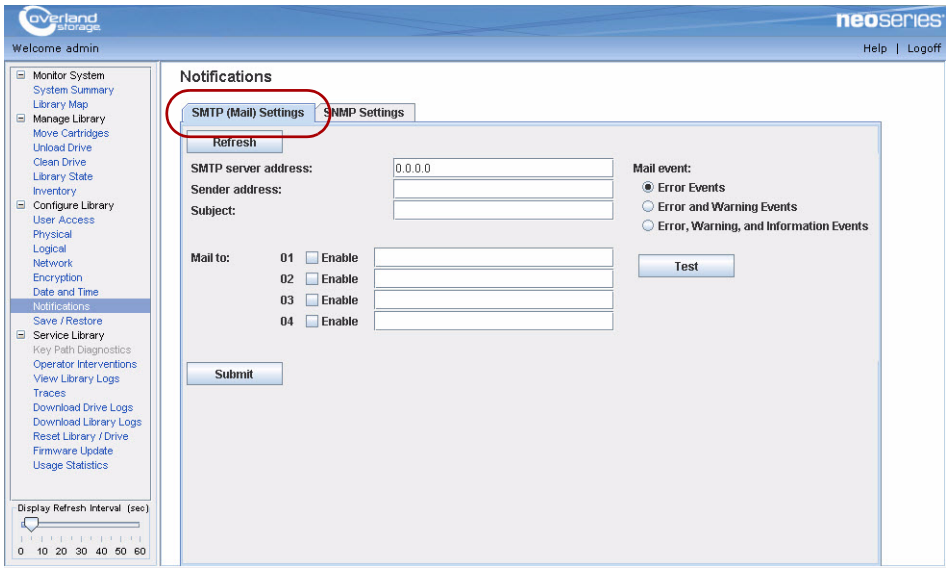
- **Auto Adjustment by PC** – Select a time interval and click Start to synchronize the library with the clock on your host computer at regular intervals. The Web User Interface Java Applet must be running continuously to use this function.

Click Submit to transfer the settings to the library. A dialog message is displayed when the settings have been updated successfully.

Click Refresh to read the current settings from the library.

Configuring Email Notifications



Use **Configure Library > Notifications > SMTP (Mail) Settings** tab to configure the email settings for sending event information whenever an event of a certain level occurs.

Configure email notification using the following settings:

- **SMTP server address** – SMTP mail server IPv4 or IPv6 address (depending on network configuration)
- **Sender address** – Email message header information
- **Subject** – Email message header information
- **Mail to** – Email addresses of contacts to be notified of the event
- **Mail event** – Event level notification threshold:
  - Error events
  - Error and Warning events
  - Error, Warning, and Information events

Click Test to send a test message to the addresses enabled in the Mail to fields.

Click Submit to transfer the settings to the library. A dialog message is displayed when the settings have been updated successfully.

Click Refresh to read the current settings from the library.

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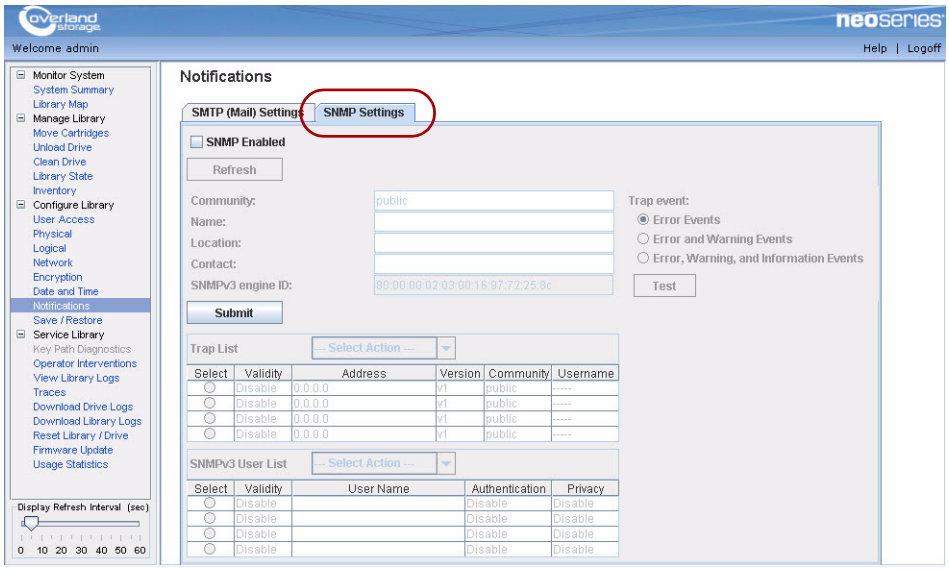
Configuring SNMP Trap Notifications



Use **Configure Library > Notifications > SNMP Settings** to configure the trap settings for sending event information whenever an event of a certain level occurs, and to register users who are permitted to access the tape library using SNMP Version 3. The traps supported by the NEO 100s library are listed in "Trap Definitions (Types)" on page B-15.

Download the SNMP MIB file for this library from Overland website (http://docs.overlandstorage.com/neo). Install the MIB file on your SNMP server. Refer to your server application documentation for instructions.

Configure SNMP trap notification using the following settings:

- **SNMP Enabled** – The SNMP Enabled checkbox must have a check mark to enable SNMP notifications.
- **Community** – SNMP community name (for example, "public")
- **Name** – Device name (for example, "NEO 100s library")
- **Location** – Physical location of the tape library
- **Contact** – Individual's name
- **SNMPv3 engine ID** – A read-only attribute identifying the SNMPv3 engine.
- **Trap event** – Event level notification threshold
  - Error events
  - Error and Warning events
  - Error, Warning, and Information events
- **Trap List** – IP addresses of the SNMP monitoring stations to be notified when an event takes place and the security settings.
  - **Validity** – Enable/Disable setting.
  - **Trap version** – v1, v2c, or v3. For v2c and v3, the Inform checkbox determines whether an SNMP INFORM request is sent instead of a trap event.
  - **IP address** – IPv4 and IPv6 addresses are supported.
  - **Community** (v1 or v2c) – SNMP community name.
  - **User name** (v3 only) – SNMPv3 unique user name.

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- **Authentication** (v3 only) – Authentication algorithm, MD5 or SHA. When an algorithm is specified, an authentication password and confirmation of the password are required.
- **Privacy** (v3 only) – Privacy service encryption and decryption algorithm, DES or AES. When an algorithm is specified, a privacy password and confirmation of the password are required.

- **SNMPv3 User List** – SNMPv3 users who are permitted to access the tape library.
  - **Validity** – Enable/Disable setting.
  - **User name** – SNMPv3 unique user name.
  - **Authentication** – The authentication algorithm, MD5 or SHA. When an algorithm is specified, an authentication password and confirmation of the password are required.
  - **Privacy** – The privacy service encryption and decryption algorithm, DES or AES. When an algorithm is specified, a privacy password and confirmation of the password are required.

Click Test to send a test trap to the IP addresses enabled in the Trap to fields.

Click Submit to transfer the settings to the library. A dialog message is displayed when the settings have been updated successfully.

Click Refresh to read the current settings from the library.

Saving and Restoring Configuration Settings

Your library configuration can be saved and restored automatically by a cookie and manually by using the Web User Interface. It is recommended that you use the Web User Interface method regardless of whether or not you use the cookie method.

Important: Verify all configuration settings after restoring your library configuration. Reset the library date and time (see "Configuring Date and Time Settings" on page 4-22).

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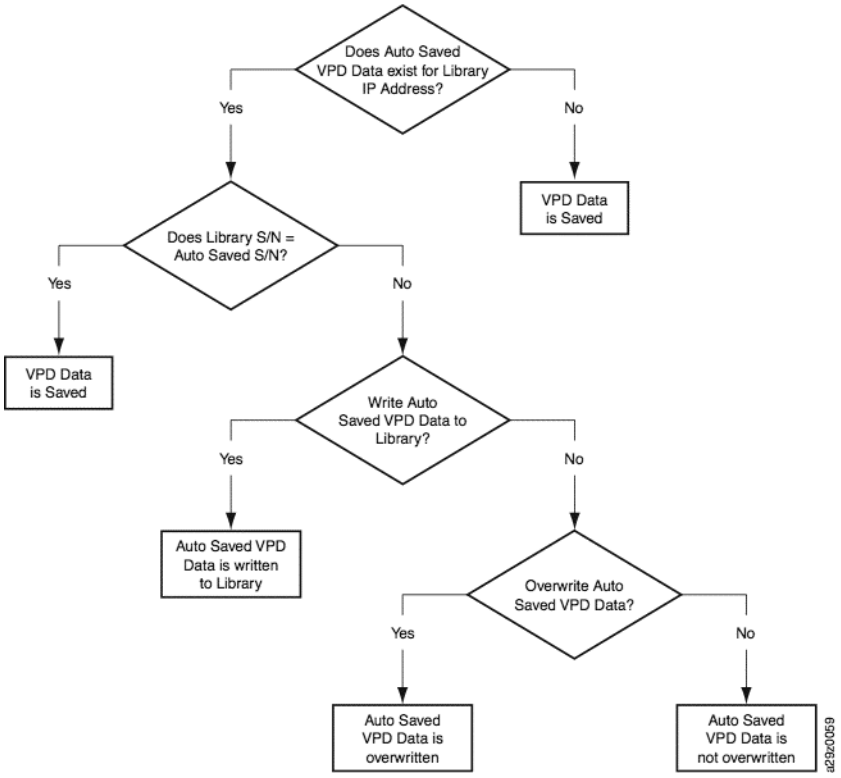
Saving and Restoring Configuration Automatically Using Cookies

If allowed by your web browser preference settings, cookies are employed to automatically save your library configuration on your host computer and automatically restore your library configuration if your library network configuration uses a static IP address. The following flowchart illustrates how VPD data is saved from and restored to a library using cookies.



Saving and Restoring Configuration Manually using Web User Interface

Use **Configure Library > Save/Restore** to manually save library configuration settings to an external file or restore configuration settings from a file. This function is useful when you have several logical configurations for different tape storage implementations that you need to switch between on a regular basis.

NOTE: When saving the library configuration manually, the library must be offline to save to files and to restore from files.

Click Save to save the current settings to a file.

Click Restore to load the settings from a file.

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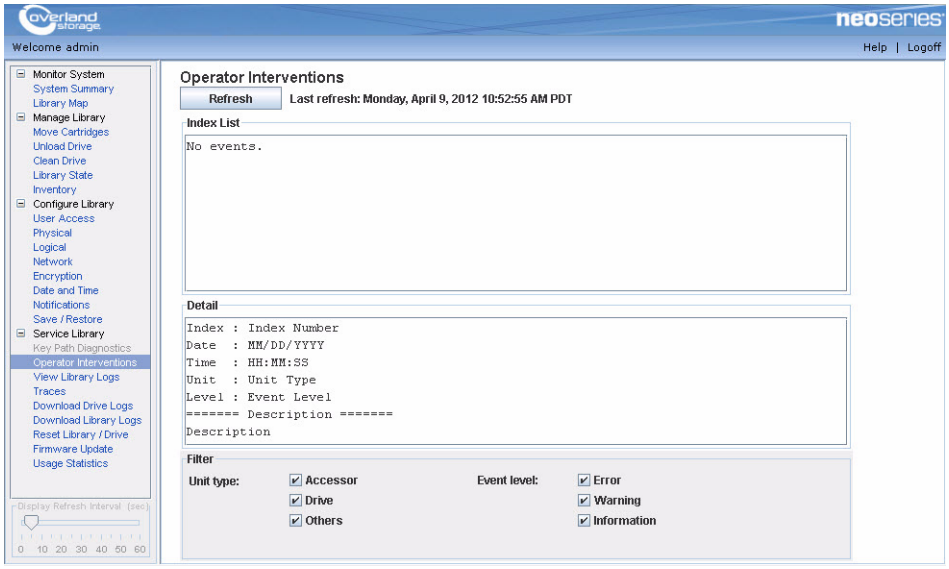
Servicing the Library

Viewing Operator Interventions



Use **Service Library > Operator Interventions** to display a log history summary of information, warning, and error events that have occurred for the selected library component units.

The summary can be filtered to display the operator intervention log for a specific hardware component and specific event levels. The log is stored in memory on the library control board. When the memory buffer is full, new events overwrite the oldest events. The log is not cleared from memory when power is turned OFF.

Click Refresh to read the log of operator interventions from the tape library. You can select an event in the Index List panel to display data specific to that event in the Detail panel.

The information displayed for the operator intervention event comprises:

- Index number of the event
- Date the event occurred
- Time the event occurred
- Unit in the library where the event occurred
- Event level
- Description of the event

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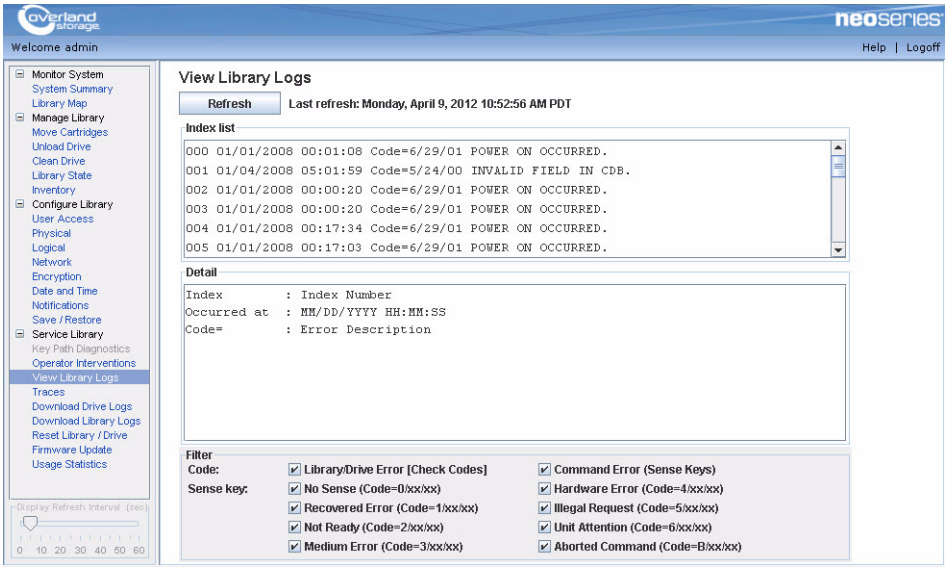
Viewing Library Logs



Use **Service Library > View Library Logs** to display a log history summary of errors that have occurred.

The error log is displayed with sense data information. The summary can be filtered to display errors with specific sense data code types.

Click Refresh to read the log of errors from the tape library. You can select an error in the Index List panel to display data specific to that error in the Detail panel.

The information displayed for the error comprises:

- Index number of the error
- Date and time the error occurred
- Error code
- Description of the error

There are two types of error data displayed in the library log with different Code attributes:

- **Library/Drive sense data** (Sense key/ASC/ASCQ)

  For example, a 5/3B/0D error states that an illegal request was initiated that resulted in a “medium destination element full” error being reported by the library. Selecting log entry 012 provides detailed sense data for this failure. Information on sense data is listed in Appendix D. Sense Data.

- **Library/Drive error code** ([Code])

  For example, in log entry 010, a [0222] error states that the library cannot eject medium because drive is in state of Prevent Media Removal. Information on errors and action to resolve the problem are listed in Appendix B. Error Codes.

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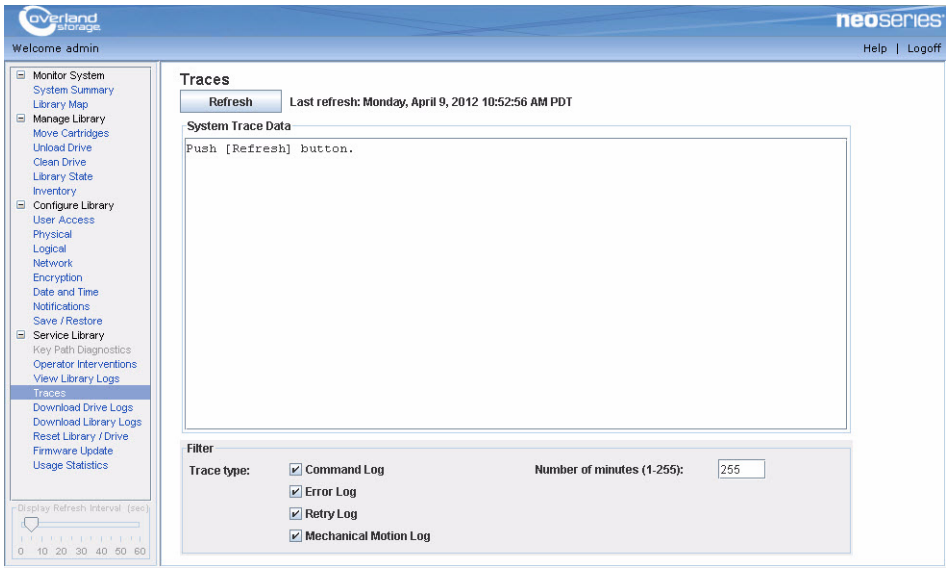
Viewing Trace Data



Use **Service Library > Traces** to display a trace history of errors that have occurred. The summary can be filtered to display the type of errors occurring within a given time period.

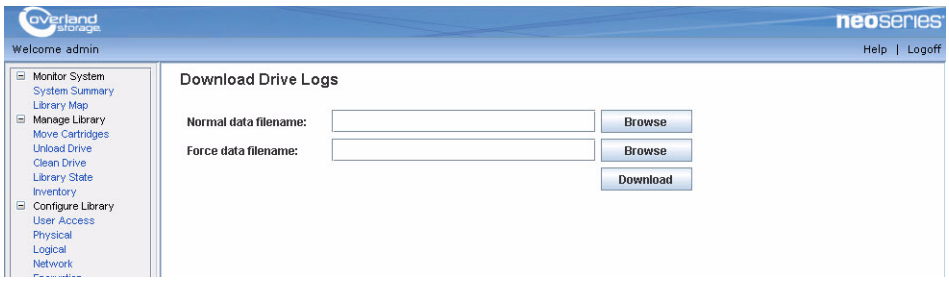
The system trace data for the interval entered in the Number of Minutes field is displayed. The summary can be filtered to trace data for specific system logs.

Click Refresh to read the system trace data from the tape library.

The information displayed in the system trace data comprises:

- Index number
- Date and time of event
- Sense data

Downloading Drive Logs



Use **Service Library > Download Drive Logs** to download a tape drive dump to file for use by support personnel to help troubleshoot a problem. To create a drive dump, you must create both normal dump data (currently stored in flash) and force dump data (currently stored in memory and moved to flash).

NOTE: Both filename fields must be entered and the filenames must be unique.

To download a drive log:

1. Take the library **offline**.
2. For each type of dump (normal or forced), click the corresponding **Browse** button to display a dialog to enter a file name and to select a location to save the drive log.

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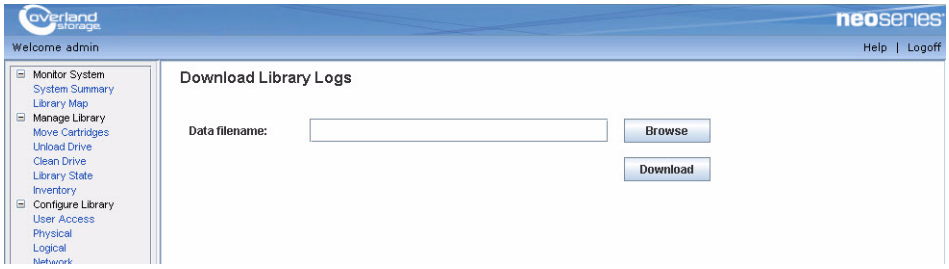
3. Click **Download** to download the drive log and save to a file.

Downloading Library Logs

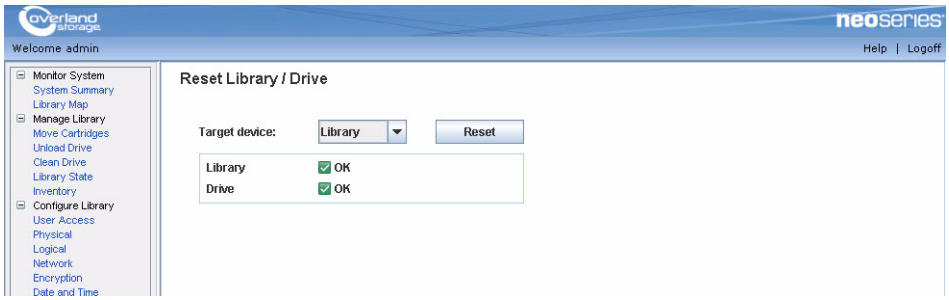


Use **Service Library > Download Library Logs** to download a tape library dump to file for use by support personnel to help troubleshoot a problem.

To download a library log:

1. Take the library **offline**.
2. Click **Browse** to display a dialog to enter a file name and to select a location to save the library log.
3. Click **Download** to download the library log and save to a file.

Resetting the Library and Drives



Use **Service Library > Reset Library/Drive** to reset the library or the tape drive.

Select the target device and click Reset. The library and tape drive status is displayed. A dialog message is displayed when the unit has been reset. The reset operation is only fully completed when the tape library is subsequently taken online.

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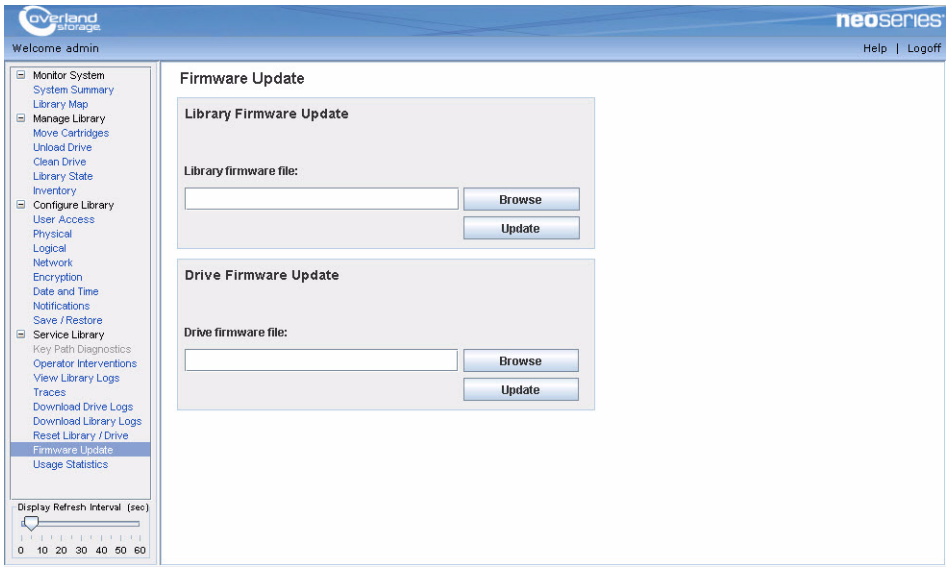
Updating Library and Drive Firmware



Use **Service Library > Firmware Update** to update the library and drive firmware.

NOTE: It is the customer's responsibility to maintain the library and drive firmware at the most recent level.

To determine the latest supported firmware level:

1. Visit the Overland NEO **support page** at:
   http://docs.overlandstorage.com/neo
2. At the bottom of the page, click the NEO 200s/400s **firmware link** to determine the latest version.
3. Compare this to the Library Firmware Version listed on the **System Summary** page.

To determine the current version of drive firmware in the library:

1. Use **Monitor System > Library Map** to display the graphical view of the library.
2. Click the **Drive component** in the library map to display Drive Information on the right side of the page.
3. Refer to the **Product ID** to determine which drive is installed in the library.
4. Ensure you download the correct **drive firmware** from the NEO support page.

To update library and drive firmware:

1. If there is a **cartridge** in the tape drive, unload the tape drive before updating library and drive firmware.
2. Use **Service Library > Firmware Update** to install the firmware:
   a. Click **Browse** to locate the library firmware file with extension ".fmg" or the LTO SAS drive firmware file with extension ".ro" that you downloaded.
   b. Click **Update**.

   The Web User Interface will indicate that the operation has completed. This means that the firmware file has been successfully moved from the host computer to the library.

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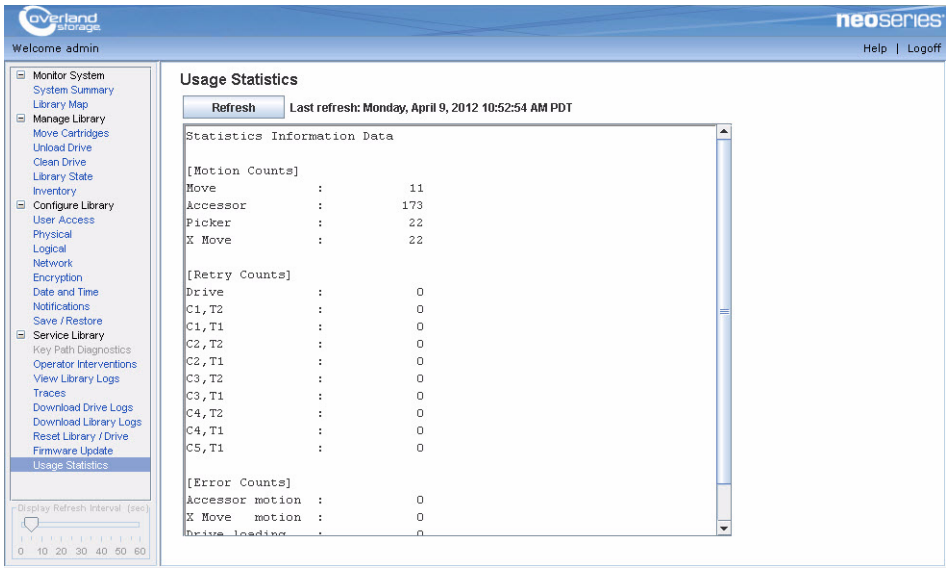
3. Wait for the library to **reboot** before resuming normal library operations. It can take several minutes before the library reboots.

IMPORTANT: After the update process starts, you must wait until the library reboots. Do not attempt to interrupt the process in any way, or the upgrade will not be successful.

4. Verify the firmware update by viewing the **System Summary** on the Web User Interface.

NOTE: The TotalStorage Tape Diagnostic Tool (ITDT) is a tool that offers multiple functional capabilities, including updating drive and library firmware. It is available for most major platforms and requires no special device drivers. In addition to the executable file, a README file is provided that describes the features and capabilities of the ITDT tool, and gives detailed information on how to use the tool.

Viewing Accessor Statistics



Use **Service Library > Usage Statistics** to view statistics information about the movement of the robotics of the library. The information presented is the following:

- **Motion counts** – Lists the accumulated operation count for all movements, accessor movements, picker movements, and X-axis movements.
- **Retry counts** – Lists the accumulated number of retries (re-attempts to load cartridges) in the drive and the cartridges positions by the accessor.
- **Error counts** – Lists the accumulated number of errors for the accessor, X-axis movements, and drive load and unload operations.

Click Refresh to read the accessor statistics from the library. The Last refresh shows the time of the most recent library data refresh.

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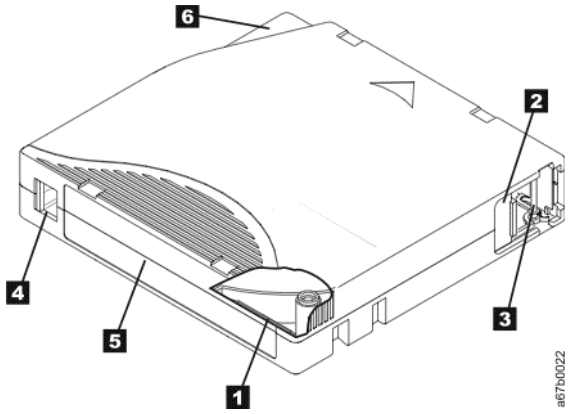
Media

This figure shows the LTO Ultrium Data Cartridge and its components:



1	LTO Cartridge Memory	4	Write-protect Switch
2	Cartridge Door	5	Label Area
3	Leader Pin	6	Insertion Guide

NOTE: The same components are on all the other LTO Ultrium Data Cartridges.

The cartridge door (2) protects the tape from contamination when the cartridge is out of the drive. The tape is attached to a leader pin (3), behind the door. When the cartridge is inserted into the drive, a threading mechanism pulls the pin (and tape) out of the cartridge, across the drive head, and onto a non-removable take-up reel. The head can then read or write data from or to the tape.

The write-protect switch (4) prevents data from being written to the tape cartridge. For more information, see "Write-Protect Switch" on page 5-7.

The label area (5) provides a location to place a label. For more information, see "Bar Code Labels" on page 5-5.

The insertion guide (6) is a large, notched area that prevents the cartridge from being inserted incorrectly.

Topics in Media:

- Data Cartridges
- Write Once, Read Many (WORM)
- Cleaning Cartridge
- Cartridge Memory Chip (LTO-CM)
- Bar Code Labels
- Write-Protect Switch

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- Cartridge Care and Handling
- Environmental and Shipping Specifications for Tape Cartridges
- Disposing of Tape Cartridges
- Ordering Media Supplies

Data Cartridges

When processing tape in the cartridges, Ultrium Tape Drives use a linear, serpentine recording format. The native data capacity and recording format of Ultrium data cartridges is as follows:

Type	Native Data Capacity	Recording Format
Ultrium 5	1500 GB (3000 GB at 2:1 compression)	Reads and writes data on 1280 tracks, sixteen tracks at a time
Ultrium 4	800 GB (1600 GB at 2:1 compression)	Reads and writes data on 896 tracks, sixteen tracks at a time.
Ultrium 3	400 GB (800 GB at 2:1 compression)	Reads and writes data on 704 tracks, sixteen tracks at a time
Ultrium 2	200 GB (400 GB at 2:1 compression)	Reads and writes data on 512 tracks, eight tracks at a time
Ultrium 1	100 GB (200 GB at 2:1 compression)	Reads and writes data on 384 tracks, eight tracks at a time

The first set of tracks (sixteen for Ultrium 5, 4 and 3) is written from near the beginning of the tape to near the end of the tape. The head then repositions to the next set of tracks for the return pass. This process continues until all tracks are written and the cartridge is full, or until all data is written.

This table lists the Nominal Cartridge Life: Load/Unload Cycles:

Type	Load/Unload Cycles
Ultrium 5	20,000 (20k)
Ultrium 4	20,000 (20k)
Ultrium 3	20,000 (20k)
Ultrium 2	10,000 (10k)
Ultrium 1	5000 (5k)

All generations contain 1/2-inch, dual-coat, metal-particle tape.

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Cartridge Compatibility

This table shows Ultrium data and cleaning cartridge compatibility with Ultrium tape drive:

	LTO Ultrium Data Cartridges				
Ultrium Tape Drive	1500 GB (Ultrium 5)	800 GB (Ultrium 4)	400 GB (Ultrium 3)	200GB (Ultrium 2)	100GB (Ultrium 1)
Ultrium 5	Read/Write	Read/Write	Read only	–	–
Ultrium 4	–	Read/Write	Read/Write	Read only	–
Ultrium 3	–	–	Read/Write	Read/Write	Read only
Ultrium 2	–	–	–	Read/Write	Read/Write
Ultrium 1	–	–	–	–	Read/Write

NOTE: The NEO 100s tape library supports only the Ultrium 4 and Ultrium 5 tape drives.

Capacity Scaling

To control the capacity of the cartridge (for example, to obtain a faster seek time) issue the SCSI command SET CAPACITY.

Write Once, Read Many (WORM)

Certain records retention and data security applications require a Write Once, Read Many (WORM) method for storing data on tape. The LTO Ultrium generation 5, 4, and 3 drives enable WORM support when a WORM tape cartridge is loaded into the drive.

WORM Media

Because standard read/write media are incompatible with the WORM feature, a specially formatted WORM tape cartridge is required.

Each WORM cartridge has a unique, worldwide cartridge identifier (WWCID), which comprises the unique CM chip serial number and the unique tape media serial number. See "Ordering Media Supplies" on page 5-11 for information on how to choose and purchase the appropriate WORM tape cartridges for your library.

Data Security on WORM Media

Certain built-in security measures help ensure that the data written on a WORM cartridge does not become compromised, for example:

- The format of an Ultrium 5 (1500 GB), Ultrium 4 (800 GB), or Ultrium 3 (400 GB) WORM Tape Cartridge is unlike that of standard read/write media. This unique format prevents a drive that lacks WORM-capable firmware from writing on a WORM tape cartridge.
- When the drive senses a WORM cartridge, the firmware prohibits the changing or altering of user data already written on the tape. The firmware keeps track of the last appendable point on the tape.

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WORM Media Errors

The following conditions cause WORM media errors to occur:

- Information in the servo manufacturer's word (SMW) on the tape must match information from the cartridge memory (CM) module in the cartridge. If it does not match, a media Error Code 7 will post on the drive's single-character display (SCD). An error will also be displayed on the Operator Control Panel.
- Inserting a WORM tape cartridge into a drive that is not WORM capable causes the cartridge to be treated as an unsupported medium. The drive will report a media Error Code 7. Upgrading the drive firmware to the correct code level will resolve the problem.

Requirements for WORM Capability

To use the WORM capability of your LTO Ultrium generation 4 or 5 drive, you need to use a compatible WORM tape cartridge.

Cleaning Cartridge

An Ultrium Universal Cleaning Cartridge is required to clean the tape drive. The drive itself determines when it needs to be cleaned and notifies the library. When notified, the library indicates that the drive needs cleaning by turning ON the “Clean Drive” LED on the front panel of the library and posting a message on the library display.

A tape drive within a library requires the use of a library menu function to either automatically or manually clean the tape drive. See Chapter 4, “Operations.”

IMPORTANT: It is recommended that the drive be cleaned only when it is requested by the drive.

The Ultrium Universal Cleaning Cartridge is valid for 50 uses. The cartridge's LTO-CM (Cartridge Memory) chip tracks the number of times that the cartridge is used.

NOTE: The drive will automatically eject an expired cleaning cartridge.

Cartridge Memory Chip (LTO-CM)

All generations of the LTO Ultrium Data Cartridges include a Linear Tape-Open Cartridge Memory (LTO-CM) chip 1, that contains information about the cartridge and the tape (such as the name of the manufacturer that created the tape), as well as statistical information about the cartridge's use. The LTO-CM enhances the efficiency of the cartridge. For example, the LTO-CM stores the end-of-data location which, when the next time this cartridge is inserted and the Write command is issued, enables the drive to quickly locate the recording area and begin recording. The LTO-CM also aids in determining the reliability of the cartridge by storing data about its age, how many times it has been loaded, and how many errors it has accumulated. Whenever a tape cartridge is unloaded, the tape drive writes any pertinent information to the cartridge memory.

The storage capacity of the LTO Generation 5 and 4 LTO-CM is 8160 bytes. LTO Generations 3, 2, and 1 have an LTO-CM capacity of 4096 bytes.

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Bar Code Labels

A bar code label contains:

- A volume serial number (VOLSER) that is human-readable
- A bar code that the library can read

NOTE: The tape drive does not require bar code labels, but you should use labels for tape cartridge identification purposes.

When read by a library's bar code reader, the bar code identifies the cartridge's VOLSER to the library. The bar code also tells the library whether the cartridge is a data cartridge or cleaning cartridge. In addition, the bar code includes the two-character media-type identifier "Lx," where x equals 1, 2, 3, 4, or 5. L identifies the cartridge as an LTO cartridge and the number represents the generation of cartridge for that cartridge type.

Tape cartridges can be ordered with the labels included or with custom labels. To order tape cartridges and bar code labels, see "Ordering Media Supplies" on page 5-11. The bar code for usage in the LTO tape library must meet predefined specifications. They include, but are not limited to:

- Six or eight (the default) uppercase alphanumeric characters, where the last two characters must be L5, L4, L3, L2, or L1
- Label and printing to be non-glossy
- Nominal narrow line or space width of 0.423 mm (0.017 in.)
- Wide to narrow ratio of 2.75:1
- Minimum bar length of 11.1 mm (0.44 in.)

This table shows which cartridges and VOLSERs are compatible with the Ultrium 3, 4, and 5 tape cartridges:

Tape Drive Cartridges	VOLSER
Ultrium 5 Data Cartridge	xxxxxxL5
Ultrium 5 WORM Cartridge	xxxxxxLV
Ultrium 4 Data Cartridge	xxxxxxL4
Ultrium 4 WORM Cartridge	xxxxxxLU
Ultrium 3 Data Cartridge	xxxxxxL3
Ultrium 3 WORM Cartridge *	xxxxxxLT
Ultrium 2 Data Cartridge	xxxxxxL2
Ultrium 1 Data Cartridge	xxxxxxL1
LTO Ultrium Cleaning Cartridge	CLNxxxLx

* An Ultrium 3 Tape Drive must have a minimum firmware level of 54xx for it to be compatible with the WORM cartridge.

When attaching a bar code label to a tape cartridge, place the label only in the recessed label area. A label that extends outside of the recessed area can cause loading problems in the drive.

NOTE: Do not place any type of mark on the white space at either end of the bar code. A mark in this area may prevent the library from reading the label.

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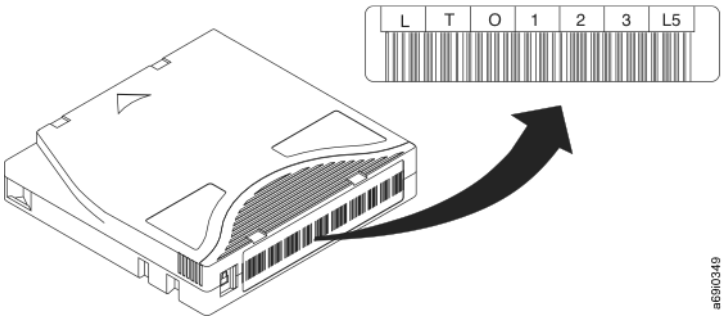

The volume serial number (LTO123), cartridge type (L5), and bar code are printed on the label.

Guidelines for Using Bar Code Labels

Apply the following guidelines whenever using bar code labels:

- Use only Overland-approved bar code labels on cartridges to be used in a NEOseries tape library.
- Do not reuse a label or reapply a used label over an existing label.
- Before you apply a new label, remove the old label by slowly pulling it at a right angle to the cartridge case.
- Use peel-clean labels that do not leave a residue after being removed. If there is glue residue on the cartridge, remove it by gently rubbing it with your finger. Do not use a sharp object, water, or a chemical to clean the label area.
- Examine the label before applying it to the cartridge. Do not use the label if it has voids or smears in the printed characters or bar code (a library's inventory operation will take much longer if the bar code label is not readable).
- Remove the label from the label sheet carefully. Do not stretch the label or cause the edges to curl.
- Position the label within the recessed label area (5).
- With light finger pressure, smooth the label so that no wrinkles or bubbles exist on its surface.
- Verify that the label is smooth and parallel, and has no roll-up or roll-over. The label must be flat to within 0.5 mm (0.02 in.) over the length of the label and have no folds, missing pieces, or smudges.
- Do not place other machine-readable labels on other surfaces of the cartridge. They may interfere with the ability of the drive to load the cartridge.

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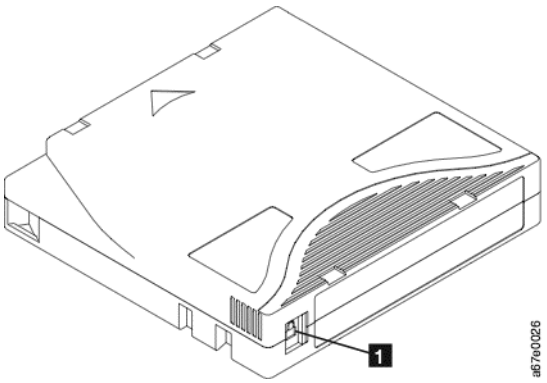
Write-Protect Switch



The position of the write-protect switch on the tape cartridge **1** determines whether you can write to the tape. If the switch is set to:

- The locked position (solid red), data cannot be written to the tape.
- The unlocked position (black void), data can be written to the tape.

If possible, use your server's application software to write-protect your cartridges (rather than manually setting the write-protect switch). This allows the software to identify a cartridge that no longer contains current data and is eligible to become a scratch (blank) data cartridge. Do not write-protect scratch (blank) cartridges; the tape drive will not be able to write new data to them.

If you must manually set the write-protect switch, slide it left or right to the desired position.

Cartridge Care and Handling

NOTE: Do not insert a damaged tape cartridge into the drive. A damaged cartridge can interfere with the reliability of a drive and may void the warranties of the drive and the cartridge. Before inserting a tape cartridge, inspect the cartridge case, cartridge door, and write-protect switch for breaks.

Incorrect handling or an incorrect environment can damage cartridges or their magnetic tape. To avoid damage to your tape cartridges and to ensure the continued high reliability of your LTO Ultrium Tape Drives, use the guidelines in the following sections.

Provide Training

- Post procedures that describe proper media handling in places where people gather.
- Ensure that anyone who handles tape has been properly trained in handling and shipping procedures. This includes operators, users, programmers, archival services, and shipping personnel.
- Ensure that any service or contract personnel who perform archiving are properly trained in media-handling procedures.
- Include media-handling procedures as part of any services contract.
- Define and make personnel aware of data recovery procedures.

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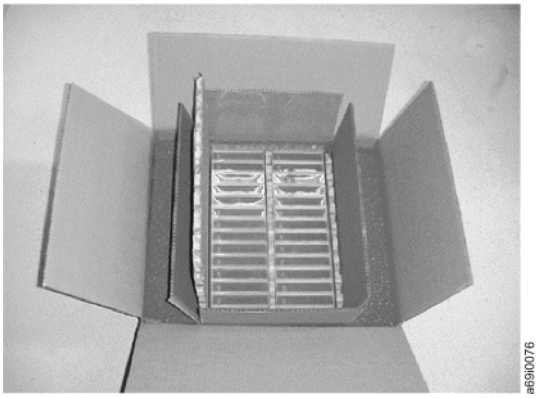
Ensure Proper Packaging

- When shipping a cartridge, use the original or better packaging.
- Always ship or store a cartridge in a jewel case.
- Use only a recommended shipping container that securely holds the cartridge in its jewel case during transportation. Ultrium Turtlecases (by Perm-A-Store) have been tested and found to be satisfactory. They are available at www.turtlecase.com.

- Never ship a cartridge in a commercial shipping envelope. Always place it in a box or package.
- If you ship the cartridge in a cardboard box or a box of a sturdy material, ensure the following:
  - Place the cartridge in polyethylene plastic wrap or bags to protect it from dust, moisture, and other contaminants.
  - Pack the cartridge snugly; do not allow it to move around.
  - Double-box the cartridge (place it inside a box, then place that box inside the shipping box) and add padding between the two boxes.



Provide Proper Acclimation and Environmental Conditions

- Before you use a tape cartridge, acclimate it to the operating environment for 24 hours or the time necessary to prevent condensation in the drive (the time will vary, depending on the environmental extremes to which the cartridge was exposed).
- Ensure that all surfaces of a cartridge are dry before inserting it.

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- Do not expose the cartridge to moisture or direct sunlight.
- Do not expose recorded or blank cartridges to stray magnetic fields of greater than 100 oersteds (for example, terminals, motors, video equipment, X-ray equipment, or fields that exist near high-current cables or power supplies). Such exposure can cause the loss of recorded data or make the blank cartridge unusable.
- Maintain the conditions that are described in "Environmental and Shipping Specifications for Tape Cartridges" on page 5-10.

Perform a Thorough Inspection

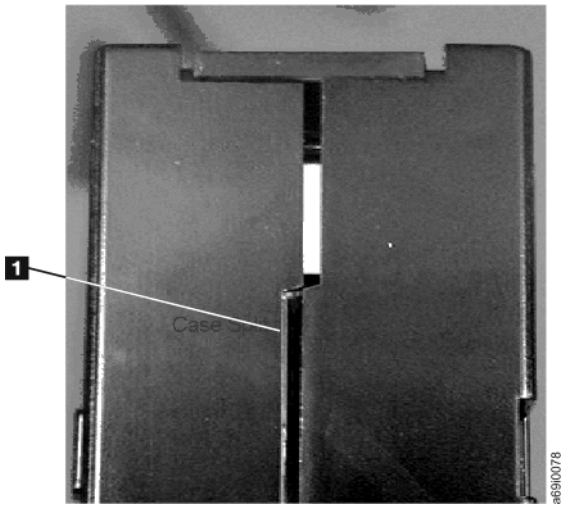
After purchasing a cartridge and before using it, perform the following steps:

Inspect the cartridge's packaging to determine potential rough handling.

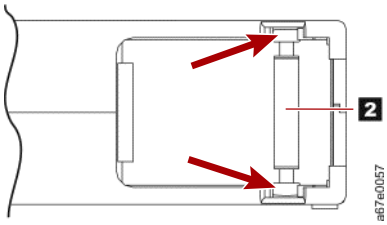
When inspecting a cartridge, open only the cartridge door. Do not open any other part of the cartridge case. The upper and lower parts of the case are held together with screws; separating them destroys the usefulness of the cartridge.

Inspect the cartridge for damage before using or storing it.

Inspect the rear of the cartridge (the part that loads first into the tape load compartment) and ensure that there are no gaps in the seam of the cartridge case (**1**). If there are gaps in the seam, the leader pin may be dislodged.



- Check that the leader pin is properly seated **2**.



- If you suspect that the cartridge has been mishandled but it appears usable, copy any data onto a good cartridge immediately for possible data recovery. Discard the mishandled cartridge.
- Review handling and shipping procedures.

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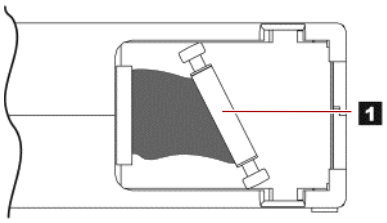
Handle the Cartridge Carefully

- Do not drop the cartridge. If the cartridge drops, slide the cartridge door back and ensure that the leader pin (1) is properly seated in the pin-retaining spring clips.



- Do not handle tape that is outside the cartridge. Handling the tape can damage the tape's surface or edges, which may interfere with read or write reliability. Pulling on tape that is outside the cartridge can damage the tape and the brake mechanism in the cartridge.
- Do not stack more than six cartridges.
- Do not degauss a cartridge that you intend to reuse. Degaussing makes the tape unusable.

Environmental and Shipping Specifications for Tape Cartridges

Before you use a tape cartridge, acclimate it to the operating environment for 24 hours or the time necessary to prevent condensation in the drive (the time will vary, depending on the environmental extremes to which the cartridge was exposed).

The best storage container for the cartridges (until they are opened) is the original shipping container. The plastic wrapping prevents dirt from accumulating on the cartridges and partially protects them from humidity changes.

When you ship a cartridge, place it in its jewel case or in a sealed, moisture-proof bag to protect it from moisture, contaminants, and physical damage. Ship the cartridge in a shipping container that has enough packing material to cushion the cartridge and prevent it from moving within the container.

The following table gives the environment for operating, storing, and shipping LTO Ultrium Tape Cartridges.

	Environmental Specifications			
Environmental Factor	Operating	Operational Storage*	Archival Storage†	Shipping
Temperature	10 to 45°C (50 to 113°F)	16 to 32°C (61 to 90°F)	16 to 25°C (61 to 77°F)	-23 to 49°C (-9 to 120°F)
Relative humidity (non-condensing)	10 to 80%	20 to 80%	20 to 50%	5 to 80%
Maximum wet bulb temperature	26°C (79°F)	26°C (79°F)	26°C (79°F)	26°C (79°F)

* The short term or operational storage environment is for storage durations of up to six months.

† The long term or archival storage environment is for durations of six months up to ten years.

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Disposing of Tape Cartridges

Under the current rules of the U.S. Environmental Protection Agency (EPA), regulation 40CFR261, the LTO Ultrium Tape Cartridge is classified as non-hazardous waste. As such, it may be disposed of in the same way as normal office trash. These regulations are amended from time to time, and you should review them at the time of disposal.

If your local, state, country (non-U.S.A.), or regional regulations are more restrictive than EPA 40CFR261, you must review them before you dispose of a cartridge. Contact your account representative for information about the materials that are in the cartridge.

If a tape cartridge must be disposed of in a secure manner, you can erase the data on the cartridge by using a high-energy ac degausser (use a minimum of 4000 oersted peak field over the entire space that the cartridge occupies). The tape should make two passes through the field at 90 degree orientation change for each pass to achieve complete erasure. Some commercial degaussers have two magnetic field regions offset 90 degrees from each other to accomplish complete erasure in one pass for higher throughput. Degaussing makes the cartridge unusable.

If you burn the cartridge and tape, ensure that the incineration complies with all applicable regulations.

Ordering Media Supplies

Extra tape cartridges and bar code labels can be obtained from Overland Storage.

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Chapter 6

Troubleshooting

IMPORTANT: Customer replaceable units (spares) documentation is available from the Overland Expert Knowledge Base System (http://support.overlandstorage.com/kb).

The entire NEO 100s library is a customer replaceable unit (CRU). The customer is responsible for the setup and maintenance of the library. Warranty replacement of a registered NEO 100s library, if required, is provided by exchanging the old unit with a new unit (everything except the power cord and rack kit [***correct??***]). The customer will be charged for on-site service if a service contract is not in place.

When an error occurs during operation of the library, the library stops the current operation and displays an error code on the Operator Control Panel. Unless otherwise noted, try to resolve the problem by cycling power to the library and retrying the last operation.

NOTE: When power cycling the library, wait 10 seconds after the power is switched OFF before powering ON again.

Before placing a service call or informing Overland Technical Support, observe the LEDs on the front panel and error messages on the Operator Control Panel to determine exactly which part is failing. See "Interpreting Front Panel LEDs" on page 6-8 for more information. If the LEDs on all components are functioning properly, see "Diagnosing a Problem" on page 6-3.

Topics in Troubleshooting:

- How the Library Reports Problems
- Library Error Message Content
- Diagnosing a Problem
- Isolating Problems
- Installation and Configuration Problems
- Interpreting Front Panel LEDs
- Reseating Cables
- Emailing Logs

How the Library Reports Problems

The library uses advanced problem detection, reporting, and notification technology to alert customers of problems as soon as they occur. It performs numerous self-tests to monitor the library's temperature, voltage and currents, and standard library operations. These tests monitor the library when the library is powered ON, and during normal operation when the library is idle.

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If the test detects a problem, the library generates a message that identifies which component is likely causing the problem. The library's Error LED and Attention LED may turn ON to indicate an abnormal state. If the problem is not severe, the Attention LED turns ON and the library continues to provide full functionality to the library. If the problem is not recoverable, the Error LED turns ON and an error message is displayed on the Operator Control Panel.

When the library generates an attention event or an error event, support staff can be notified immediately by setting up e-mail event notification and/or SNMP trap notification. The type of event that generates e-mail notification or SNMP trap notification can be selected to limit the number of events to a specific priority level.

Customers can frequently resolve a simple problem themselves by using the information found in "Diagnosing a Problem" on page 6-3. If the problem is unrecoverable, the customer must contact Overland Technical Support.

Library Error Message Content

When a library event occurs, the event is logged into Flash memory on the Library Control Board.

The library error log can be viewed on the Operator Control Panel by selecting **Service > View Error Status**. The log lists all of the library error messages in the order in which they occurred, starting with the most recent at the top.

The Web User Interface can display a log history summary of information, warning, and error events that have occurred by selecting **Service Library > Operator Interventions**. The summary can be filtered to display the operator intervention log for a specific hardware component and specific event levels. The log is stored in memory on the Library Control Board. When the memory buffer is full, new events overwrite the oldest events. The log is not cleared from memory when power is turned OFF. The information displayed in the **Detail** panel for the selected operator intervention event comprises of:

- Index number of the event
- Date the event occurred
- Time the event occurred
- Unit in the library where the event occurred
- Event level
- Description of the event

The Web User Interface can also display a log history summary of errors that have occurred by selecting **Service Library > View Library Logs**. The error log is displayed with sense data information. The summary can be filtered to display errors with specific sense data code types. The information displayed in the **Detail** panel for the selected error comprises of:

- Index number of the error
- Date and time the error occurred
- Error code
- Description of the error

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Diagnosing a Problem

Problem Area	If...	Then...
Cartridge	A cartridge is not ejecting from the drive...	1. Try unloading the drive (Operator Control Panel: Commands > Unload). 2. Power cycle the library. 3. If the cartridge does not eject from the drive, contact Overland Technical Support.
	The cartridge case or tape inside the cartridge is damaged...	Replace the tape cartridge.
	Your cleaning cartridge expires...	Replace the cleaning cartridge.
	A bar code label cannot be read by the bar code reader...	1. Export the suspect cartridge from the library. 2. Confirm that the bar code label is not damaged or missing. Replace the bar code label, if necessary. 3. Import the cartridge back into the library. 4. Inventory the library. • If no errors are reported, resume normal library operations. • If an error is reported, see Appendix B, "Error Codes."
Cartridge Magazine	The magazine will not unlock after issuing the Unlock Magazine command from the Operator Control Panel...	1. Power cycle the library. 2. Try unlocking the magazine again (Operator Control Panel > Unlock Magazine). • If the magazine does not unlock, see "Unlocking the Cartridge Magazine Manually" on page 6-10. If the magazine does unlock, resume normal library operations.
	The magazine can only be partially removed from the library... The magazine seems stuck on something inside the library...	1. Verify that you have requested the library to unlock the entire magazine, not just the Mail Slot (if enabled), then retry the operation. 2. Carefully pull the magazine out of the library. Stop if you feel any resistance (as if something is blocking the magazine inside the library). 3. If the magazine still cannot be removed from the library, contact Overland Technical Support.

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Problem Area	If...	Then...
Communication Functions	You are experiencing difficulty exercising some library functions (for example, updating firmware or logging in to the library remotely)...	1. If you have a recent backup of your configuration, proceed to the next step. If you do not, try to save one now (Web User Interface: **Configure Library > Save/Restore**). 2. If using a static IP address, make note of your library's IP address. If using DHCP, proceed to the next step. 3. Restore factory defaults (Operator Control Panel: **Configuration > Set Default**). 4. If using a static IP address, disable DHCP (the default setting) and enter the library IP address (Web User Interface: **Configure Library > Network**; Operator Control Panel: **Configuration > Configure Network Settings**). If using DHCP, proceed to the next step. 5. Restore the library configuration (Web User Interface: **Configure Library > Save/Restore**).
Error Codes or TapeAlert Flags	The library issued an error code... An error message was received via email notification (if enabled)...	1. Make note of the error code. 2. Power cycle the library. • If the error reoccurs, see Appendix B, "Error Codes.". • If the error does not reoccur, resume normal library operations.
	A TapeAlert flag was received...	1. Make note of the TapeAlert flag. 2. Power cycle the library. a. If the TapeAlert reoccurs, see Appendix C, "TapeAlert Flags." b. If the TapeAlert does not reoccur, resume normal library operations.
	The error code represents an unrecoverable error...	Contact Overland Technical Support.
	You get repeated errors...	1. Reset the library. 2. If the library is still reporting errors, power cycle the library. If no errors are reported, resume normal library operations. 3. If the library still fails, reset factory defaults. If no errors are reported, resume normal library operations. 4. If the problem persists, contact Overland Technical Support.
	You are experiencing a problem with your library and no error code was created...	1. Run Library Verify to identify and resolve the problem. See Chapter 4, "Running Library Verify Diagnostics." 2. If the problem persists, contact Overland Technical Support.

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Problem Area	If...	Then...
Firmware	The Library firmware does not complete the boot-up process and appears hung...	Failure of the login screen to appear on the Operator Control Panel in 15 minutes indicates that the boot-up process is not completing. 1. Power OFF the library and wait at least one minute before powering ON to recover from the problem. 2. If a library firmware update was just performed, try repeating the update procedure.
	All firmware (library and drive) is not at the latest level...	See "Updating Library and Drive Firmware" on page 4-31.
Front Panel LEDs	One or more front panel LEDs is ON or blinking...	See "Interpreting Front Panel LEDs" on page 6-8.
Host Attachment Interface	You are experiencing host attachment interface problems...	See "Isolating Host Attachment Interface Problems" on page 6-7.
Installation and Configuration	You are experiencing trouble installing or configuring your library...	See "Installation and Configuration Problems" on page 6-7.
ITDT	The Performance Test duration varies...	Items affecting the duration of the test are: • The level of adapter device driver • Your adapter model and type
Library Not Booting	There is a blank Operator Control Panel/display... The Accessor does not move... The display is stuck on initialization for extended period of time...	Failure of the login screen to appear on the Operator Control Panel within 15 minutes indicates that the boot process is not completing. 1. Power OFF the library and wait at least one minute before powering ON to recover from the problem. 2. If a library firmware update was just performed, try repeating the update procedure.
Logs	You are required to download the library log or drive log...	Using the Web User Interface, access the logs: • Library log: **Service Library > Download Library Logs** • Drive log: **Service Library > Download Drive Logs**
	You need to acquire library or drive information at the host...	See your host documentation.
Network Time Protocol (NTP)	The library time is not being updated by the NTP server...	Using the Web User Interface: 1. Disable NTP. 2. Set the time manually. 3. Enable NTP.
Power	If the power supply switch is ON and the library is OFF...	See "Isolating Library Power Problems" on page 6-6.
Web User Interface	HTML error 404 appears on computer screen when trying to launch the Web User Interface...	See "Isolating Web User Interface Problems" on page 6-6.

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Isolating Problems

Isolating Library Power Problems

1. Ensure the **power cord** is plugged in at the power supply and at the electrical outlet, then turn library power ON.

   Feel for air flowing out of the cooling fan grill on the rear of the library. Power is good if air is flowing from the cooling fan grill.

2. If there is **no power**, do the following:

   a. Plug the power cord into another electrical **outlet**.

   b. Plug **another device** into the outlet to test.

   c. If the outlet tests OK, try another **power cord**.

3. If you have verified that the electrical outlet and power cord works properly, but the power supply is still failing, replace the **library**.

4. If the power supply seems to be delivering power to the library; however, air does not flow from the power supply cooling fan grill on the rear of the library, replace the **library**.

Isolating Drive Problems

1. Ensure that the **drive firmware** is at the latest level (visit http://docs.overlandstorage.com/neo).

2. Cycle library **power**.

3. If the drive is experiencing permanent or temporary errors or if the Clean LED is lit on the front panel of the library, clean the **drive**.

4. Run **Library Verify**.
   - If the test fails, replace the **library**.
   - If the test passes, run **SAS Wrap Test**.
     - If the test passes, resume **normal** library operations.
     - If the test fails, replace the **library**.

5. Using the host interface test tool, ITDT, run the **Scan** function (s) to verify that the host application interface can detect the drive and the library. To further test the interface communication path, run the **Test Device** function (t), if available, after selecting the drive. This function will write/read data across the interface as well as sending a command to the drive to run the internal performance Read/Write test.

6. If the host tool, ITDT, cannot detect the **drive or library**, look for problems with the host interface cabling, the HBA, the device driver or the backup application software.

Isolating Web User Interface Problems

1. Verify that you entered the **account name and password** correctly.

   The account name and password are case sensitive.

2. Verify that other library users are **not entering commands** from the Web User Interface or Operator Control Panel at the same time you are issuing commands.

3. Ensure that library **firmware** is at the latest level (visit http://docs.overlandstorage.com/neo).

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4. Ensure that the **Ethernet cable** is securely plugged in the rear of the library at the Ethernet port.
5. Ensure that the correct IP, netmask, and gateway addresses are keyed into the **network parameters**.
6. Ensure that the correct IP address is being used on the **web browser**.
7. If the Ethernet connection is a direct connection between the PC and the library, a special "**crossover**" Ethernet cable is required.

   NOTE: On newer PCs, either straight through or crossover Ethernet cables may be used since the crossover requirement is provided internally.

8. Check the **Ethernet cable** carefully (or try another cable) and, if the cable is connected to a network hub or switch, try a **different port**.
9. If the Web User Interface is still malfunctioning, contact Overland Technical Support.

Isolating Host Attachment Interface Problems

After successfully exercising "Isolating Drive Problems" on page 6-6, and more specifically **Service > Library Verify** ("Running Library Verify Diagnostics" on page 4-11) from the Operator Control Panel, the following procedures are suggested to help isolate the failure to properly establish connectivity to the Host Bus Adapter (HBA).

1. If not already performed, run **SAS Wrap Test** from the Operator Control Panel. The test will require that a proper Wrap Tool be installed at some point during the test procedure.
   - If the wrap test fails, replace the **library**, and skip to Step 3.
   - Otherwise, continue with Step 2 if the wrap test **passes**.
2. Use the **ITDT utility** to evaluate connectivity from the HBA through the cabling to the drive. ITDT does not require separate device drivers, thus the Operating System has the ability to scan and find all the LTO devices that are attached.
   - If ITDT **cannot** successfully locate the LTO drive, suspect cabling or HBA problems, and skip to Step 4.
   - If ITDT **successfully** located the LTO drive, proceed to Step 3.
3. If ITDT successfully locates the LTO devices, verify that the correct **application** device drivers and backup application software is properly installed.
4. Ensure that all the **required or latest** available Operating System files and/or updates (DLLs, PTFs, and so on) have been installed and applied.

Installation and Configuration Problems

Problems encountered during the installation of the library are usually caused by improper application software configuration errors or an incorrectly configured operating system. If the application software that you are using is not communicating with the library after installation, check the following:

- **Accessor locking screw** – Ensure that the Accessor locking screw on the rear panel of the library has been removed before powering on the library. See "Removing the Accessor Locking Screw" on page 3-5.

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- **HBA LUN 0/1 support** – A single ID will address both drive and library since the drive is LUN 0 and the library is LUN 1. These models require an HBA that supports LUN scanning which must be enabled at the HBA.
- **Cable connections** – Ensure that there are no bent pins on cables and that all connections are securely fastened.
- **SAS cables and interposers** – Ensure that SAS cables and interposers (if any) are properly attached. See "Attaching the Cables" on page 3-5.
- **Backup application installation** – Refer to the documentation included with your backup application software for instructions on how to verify proper installation.
- **Device driver installation** – Ensure that the proper device driver, if applicable, is installed for the library.

NOTE: Many backup applications use their own drivers for the library and drive. Before installing a driver, make sure it will not be in conflict with the software. Contact your backup application vendor for this information.

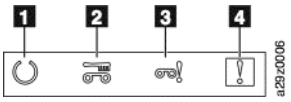
Review the information in Chapter 3, "Installation & Configuration,"to determine if a step was missed or misread.

If you are still experiencing difficulty installing or configuring your library, contact Overland Technical Support.

IMPORTANT: Do not disassemble the library. The warranty on your library is voided if the unit is disassembled.

Interpreting Front Panel LEDs

Light emitting diodes (LEDs) on the front panel of the library provide a visual indication about the status of certain library components. The LEDs can sometimes communicate that a problem exists when operator interventions cannot.



1	Ready/Activity LED	3	Attention LED
2	Cleaning LED	4	Error LED

Library Condition	Ready/Activity LED	Cleaning LED	Attention LED	Error LED	Message on Display
POST (Power ON Self Test)	Blinks 2 times per second	OFF	OFF	OFF	INITIALIZING... INVENTORY...
Magazine open	Blinks 2 times per second	OFF	OFF	OFF	PLEASE INSERT MAGAZINE
Magazine unlocked	Blinks 2 times per second	OFF	OFF	OFF	MAGAZINE UNLOCKED
Mail Slot open	Blinks 2 times per second	OFF	OFF	OFF	PLEASE CLOSE I/O STATION

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Library Condition	Ready/Activity LED	Cleaning LED	Attention LED	Error LED	Message on Display
Mail Slot unlocked	Blinks 2 times per second	OFF	OFF	OFF	I/O STATION UNLOCKED
Library firmware is being updated	Blinks 2 times per second	OFF	OFF	OFF	LOADER FIRMWARE UPDATING!
Drive firmware is being updated	Blinks 2 times per second	OFF	OFF	OFF	DRIVE FIRMWARE UPDATING!
Drive dump is being uploaded to host computer	Blinks 2 times per second	OFF	OFF	OFF	DRIVE DUMP DATA UPLOADING!
Library is offline	Blinks 2 times per second	OFF	OFF	OFF	OFFLINE
Cartridge is being moved	Blinks 1 time per second	OFF	OFF	OFF	READY
Library error occurred	ON	OFF	OFF	ON	*** CHK *** CODE: [XXXX]
Drive error occurred	ON	OFF	OFF	ON	DRIVE FAULT CODE: [X]
Cartridge error occurred	ON	OFF	ON	OFF	MEDIA FAULT CODE: [X]
Cleaning cartridge has expired	ON	OFF	ON	OFF	REPLACE CLEANING MEDIA
Drive has requested to be cleaned	ON	ON	OFF	OFF	CLEAN DRIVE
Drive is being cleaned	ON	Blinks 1 time per second	OFF	OFF	CLEANING...
Library is online and ready to receive a command	ON	OFF	OFF	OFF	READY

Reseating Cables

To reseat external library cables, perform the following steps:

1. Locate the following **cables** on the rear panel of the library.
   - SAS attachment for the drive
   - Ethernet cable for connection to a network
   - Power supply cable
2. Check and **reseat**, if necessary, all of the cables connected to your library.
3. Verify that there is no damage to any **connector pins**.

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Emailing Logs

Logs provide a summary of the current status, warnings, and errors in the library, and include configuration settings and information provided in Operator Interventions.

Download current logs of the library and drive when requested by your service representative. To email current logs:

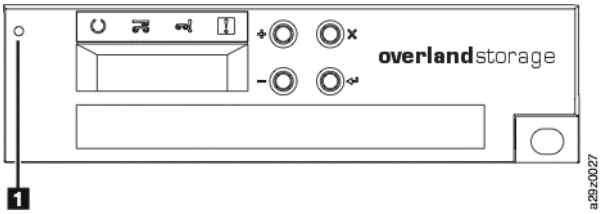
1. Ensure that **no applications** are accessing the library. If a library operation is in progress, wait until it finishes before attempting to generate the logs.
2. Download the current library log from the Web User Interface by selecting **Service Library > Download Library Logs**, click **Refresh**, and click **Download**.
3. Download the current drive log from the Web User Interface by selecting **Service Library > Download Drive Logs**, click **Refresh**, and click **Download**.
4. When requested by Overland Technical Support, attach the **log** to an email message and send it to Overland for further diagnosis.

Unlocking the Cartridge Magazine Manually

This procedure is used to remove the cartridge magazine manually when, for example, the power is turned OFF or if the magazine fails to unlock in response to the Unlock Magazine command from the Operator Panel.

To unlock the cartridge magazine manually:

1. On the front panel, locate the **access hole** for the cartridge magazine locking release mechanism to the left of the Operator Control Panel (**1**).



2. Insert the end of a **straightened paper clip**, or similar object, into the lock release access hole and gently push the lock mechanism to release the lock and eject the cartridge magazine.
3. If the Mail Slot is enabled, push the lock mechanism **twice** or push and hold the lock mechanism until the cartridge has been withdrawn far enough to clear the Mail Slot lock.
4. Remove the **cartridge magazine** from the front of the library.

   If the magazine is stuck in the library and does not eject, contact Overland Technical Support.
5. Examine the magazine and cartridges for **damage**.
   - If there is damage to a cartridge, replace that cartridge.
   - If there is damage to the magazine, replace the magazine.

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Appendix A

Specifications

Physical Specifications

Parameter	Measurement
Front panel width (chassis/bezel)	445 mm (17.52 in.)/483 mm (19.02 in.)
Depth	850 mm (33.46 in.)
Height	44 mm (1.73 in.)
Weight (library only)	13 kg (28.66 lbs)

Electrical Specifications

Parameter	Measurement
Voltage	100 to 240 Vac. (4.0 to 1.5 A)
Frequency	50 to 60 Hz
Power consumption	110 W

For additional installation information, see "Choosing a Location" on page 3-1.

Environmental Specifications

Parameter	Operating (see Note)	Storage	Shipping
Temperature	10 to 38 °C (50 to 100 °F)	1 to 60 °C (34 to 140 °F)	-40 to 60 °C (-40 to 140 °F)
Temperature variation	10 °C/hour (max)	10 °C/hour (max)	10 °C/hour (max)
Relative humidity	20 to 80%	10 to 90%	10 to 90%
Wet bulb temperature	26 °C (78.8 °F) max.	29 °C (84 °F) max.	29 °C (84 °F) max.
Altitude (meters)	0 to 2,500	0 to 2,500	0 to 2,500

NOTE: The operating environment of the library must not conflict with the media storage requirements. The library may be capable of operating at elevated temperatures for an extended period, however, the temperature could shorten the useful life of media that is stored in the library. If media is stored in the library for more than 10 hours, the storage temperature requirements for media should be met. It should be assumed that media stored in the library is approximately 2 degrees above ambient temperature when the library is powered ON.

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Operational Specifications

Operational specifications based on tape drive:

Parameter	Model With LTO-5	Model With LTO-4
Maximum storage capacity	13.5 TB (27 TB with 2:1 compression)	7.2 TB (14.4 TB with 2:1 compression)
Maximum number of data cartridges	9 (including an optional Mail Slot)	
Drive types	Ultrium 5 Half-Height	Ultrium 4 Half-Height
Sustained native data transfer rate	140 MB/s (280 MB/s with 2:1 compression)	120 MB/s (240 MB/s with 2:1 compression)
Interface	6 Gb/s SAS	6 Gb/s SAS

Acoustical specifications:

Parameter	Measurement
Idling acoustical noise sound power level LwAD in Bels (1 Bel = 10 dB)	6.6
Maximum acoustical noise sound power level LwAD in Bels (1 Bel = 10 dB)	6.8

Product Environment

The NEO 100s library is designed to operate in a general business environment.

The library meets the acoustical requirements for general business area category 2D. Category 2D states that the library should be installed a minimum of 4 m (13 ft.) from a permanent work station.

To allow for service access, install the library a minimum of 0.9 m (3 ft.) from all obstacles.

The library is a precision computer peripheral. To ensure maximum longevity of your library, locate the library away from dust, dirt, and airborne particulates, as follows:

- Keep the library away from high-traffic areas, especially if the floor is carpeted. Carpeting harbors dust and people walking on the carpet can cause the carpet fibers and the dust to become airborne.
- Keep the library out of printer and copier rooms because of toner and paper dust. Additionally, do not store paper supplies next to the library.
- Keep the library away from moving air caused by doorways, open windows, fans, and air conditioners.

Ensure that the machine covers are always kept closed to minimize any contamination.

Supported Servers, Operating Systems, and Software

The NEO 100s library is supported by a wide variety of servers (hosts), operating systems, adapters, and software. The supported attachments and software can change throughout the life cycle of the product.

To determine the latest supported attachments, visit the Overland Storage website.

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Supported Device Drivers

NOTE: If you do not have Internet access and you need information about device drivers, contact your Marketing Representative.

Device drivers enable the drive to interact with a variety of servers. To properly install a device driver (if required), refer to the installation technical bulletin on the NEO 100s support website. For applications that use other device drivers, see the application's documentation to determine which drivers to use.

Overland Storage maintains the levels of device drivers and driver documentation for the tape drives on the Internet. You can access this material at the web site:

http://docs.overlandstorage.com/neo

NOTE: The device driver for System i® servers is included in the OS/400® operating system.

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Appendix B

Error Codes

When an error occurs during operation of the NEO 100s library, the library stops the current operation and displays an error code on the Operator Control Panel. Unless otherwise noted, try to resolve the problem by cycling power to the library and retrying the last operation.

NOTE: When power cycling the library, wait 10 seconds after the power is switched OFF before powering ON again.

Topics in Error Codes

- Library Error Codes
- Drive Error Codes
- Web User Interface Error Messages
- Trap Definitions (Types)

Library Error Codes

Code (H)	Description	Panel Indication	Action Required
0000	No valid error code information.	–	1. Upgrade/reinstall firmware and try again. 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
0001	At power-on initialization, a firmware error was detected.	All 4 LEDs ON	
0002	At power-on initialization, a RAM (base area) error was detected.	Ready/Activity LED ON and Error LED ON	
0003	At power-on initialization, a RAM (buffer area) error was detected.	CHK 0003	
0008	A usable drive could not be detected.	CHK 0008	1. Observe LEDs. See "Interpreting Front Panel LEDs" on page 6-8. 2. Reseat all cables. See "Reseating Cables" on page 6-9. 3. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.

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Code (H)	Description	Panel Indication	Action Required
0009	The Accessor locking screw has not been removed.	CHK 0009	1. Remove the Accessor locking screws. See "Removing the Accessor Locking Screw" on page 3-5. 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
0010	Information acquisition from the DHCP server failed.	–	1. Observe LEDs. See "Interpreting Front Panel LEDs" on page 6-8. 2. Confirm the DHCP server settings. 3. Reseat all cables. See "Reseating Cables" on page 6-9. 4. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
0011	Time acquisition from the NTP server failed.	–	1. Observe LEDs. See"Interpreting Front Panel LEDs" on page 6-8. 2. Confirm the time server settings. 3. Reseat all cables. See "Reseating Cables" on page 6-9. 4. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
0020	LDI I/F error. Transmit data abnormality detected (NAK reception).	–	1. Observe LEDs. See"Interpreting Front Panel LEDs" on page 6-8. 2. Reseat all cables. See "Reseating Cables" on page 6-9. 3. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
0021	LDI I/F error. Receive timeout detected (ACK/NAK reception).	–	
0022	LDI I/F error. Response packet reception timeout detected.	–	
0023	LDI I/F error. ENQ receive timeout detected.	–	
0024	LDI I/F error. Receive data abnormality detected.	–	

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Code (H)	Description	Panel Indication	Action Required
002C	LDI I/F error. ACK IU event timeout detected.	–	Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
002D	LDI I/F error. Response IU event timeout detected.	–	
002E	LDI I/F error. Transfer Ready IU event timeout detected.	–	
002F	LDI I/F error. Undefined error detected.	–	
0040	A drive media error detected upon insertion.	CHK 0040	1. Verify that the cartridge is compatible with the drive in your library. See Chapter 5, "Media." 2. Verify that the cartridge is not write-protected. See "Write-Protect Switch" on page 5-7. 3. If it is a cleaning cartridge, verify that the cartridge has not expired. See "Viewing the Library Map" on page 4-14 4. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
0041	A hardware error detected upon media insertion	CHK 0041	
0042	A drive load timeout error detected upon insertion.	CHK 0042	Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
0048	Incompatible medium installed.	CHK 0048	Verify that the cartridge is compatible with the drive installed in the library. See Chapter 5, "Media." • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.

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Code (H)	Description	Panel Indication	Action Required
0053	Response acknowledge error received from bar code reader. Suspect the bar code reader cable connection.	CHK 0053	1. Initiate an inventory. "Conducting a Library Inventory" on page 4-5 (Operator Control Panel) or "Conducting a Library Inventory" on page 4-18 (Web User Interface). 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
0056	Receive data checksum error received from bar code reader. Suspect the bar code reader cable connection.	CHK 0056	
0057	Invalid data received from bar code reader. Suspect the bar code reader cable connection.	CHK 0057	
0058	A bar code reader read-error detected. Suspect the bar code reader cable connection.	CHK 0058	
0059	A bar code reader FLASH control error detected. Suspect the bar code reader cable connection.	CHK 0059	
005A	A bar code reader diagnostics error detected. Suspect the bar code reader cable connection.	CHK 005A	
005B	I2C I/F error. A transfer retry detected. Suspect the bar code reader cable connection.	CHK 005B	
005C	I2C I/F error. Interrupt timeout detected. Suspect the bar code reader cable connection.	CHK 005C	
005D	I2C I/F error. Invalid signal (NAK) detected. Suspect the bar code reader cable connection.	CHK 005D	
005E	I2C I/F error. Bus arbitration lost error detected. Suspect the bar code reader cable connection.	CHK 005E	
005F	I2C I/F error. Ready condition does not occur. Suspect the bar code reader cable connection.	CHK 005F	

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Code (H)	Description	Panel Indication	Action Required
0070	Calibration failed because the Accessor contains media. Suspect the centering sensor.	CHK 0070	1. Attempt to unload the cartridge from the Accessor. See "Moving Cartridges" on page 4-5 (Operator Control Panel) or "Moving Cartridges" on page 4-16 (Web User Interface). 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
0071	Calibration failed due to an empty magazine. Suspect the magazine set sensor.	CHK 0071	Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
0072	Calibration measurement invalid data error. Suspect the centering sensor, X motor, or P motor.	CHK 0072	
0074	GET, centering check, or bar code reader read operation failed because the Accessor contains media. Suspect the centering sensor.	CHK 0074	
0075	PUT operation failed because the Accessor contains no media. Suspect the centering sensor.	CHK 0075	
007C	Drive does not enter EJECT state (and media not ejected) within 200 seconds of a GET command. Suspect the drive.	CHK 007C	1. If the cartridge does not eject, try to unload the cartridge from the drive using the Operator Control Panel (**Commands > Unload**) or the Web User Interface (**Manage Library > Unload**). Move the cartridge from the drive to the Mail Slot. Remove the cartridge from the library and inspect for damage and replace, if necessary. 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
007D	Drive does not enter MOUNT state within 200 seconds of a PUT command. Suspect the drive or X motor.	CHK 007D	Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
007E	Drive does not enter SET state within 3 seconds of a PUT command. Suspect the drive or X motor.	CHK 007E	

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Code (H)	Description	Panel Indication	Action Required
007F	Drive I/F or connection error occurs during a PUT operation or GET operation. Suspect the drive.	CHK 007F	1. Reseat all cables. See "Reseating Cables" on page 6-9. 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
0080	X movement error #1. During X movement, the target stop position's origin sensor error detected. Suspect the X origin sensor or X motor.	CHK 0080	1. Check the Accessor locking screw and remove it if it is installed. See "Removing the Accessor Locking Screw" on page 3-5. 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
0081	X movement error #2. During X movement, a motor sync error detected. Suspect the X encoder sensor or X motor.	CHK 0081	
0082	X movement error #3. During initialization, a motor sync error detected. Suspect the X encoder sensor or X motor.	CHK 0082	
0083	During an eject operation or move operation (to a storage position), the X origin sensor could not be detected. Suspect the X origin sensor or X motor.	CHK 0083	
0084	During initialization, the X origin position could not be detected. Suspect the X origin sensor or X motor.	CHK 0084	
0088	X calibration error #1. During X calibration, centering sensor OFF condition could not be detected.	CHK 0088	
0089	X calibration error #2. During X calibration, centering sensor ON condition could not be detected.	CHK 0089	
008F	During X operation, the cartridge magazine was removed. Suspect the magazine set sensor.	CHK 008F	1. Confirm the magazine is closed. 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.

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Code (H)	Description	Panel Indication	Action Required
00B0	Failed to detect media in the Accessor at completion of GET operation. Suspect the centering sensor, X motor, or P motor.	CHK 00B0	1. Confirm the media is compatible. 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
00B1	No media is contained in the specified cell (Cell Empty). Suspect the centering sensor, X motor, or P motor.	CHK 00B1	Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
00B2	Media detected in the Accessor at completion of centering check operation. Suspect the centering sensor.	CHK 00B2	1. If the cartridge remains in the Accessor, try to move the cartridge from the Accessor to the Mail Slot using the Operator Control Panel or Web User Interface. Remove the cartridge from the library and inspect for damage and replace, if necessary. 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
00B3	Media detected in the Accessor at completion of PUT operation. Suspect the centering sensor.	CHK 00B3	

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Code (H)	Description	Panel Indication	Action Required
00B8	Accessor error #1. Reverse REV position (PP1) error (Accessor origin not detected or FWD position detected). Suspect the P origin sensor, FWD sensor, or P motor.	CHK 00B8	1. Check the Accessor locking screw and remove it if it is installed. See "Removing the Accessor Locking Screw" on page 3-5. 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
00B9	Accessor error #2. Forward FWD position (PP2) error (Accessor origin detected or FWD not detected). Suspect the P origin sensor, FWD sensor, or P motor.	CHK 00B9	
00BA	Accessor error #3. PUT/GET/bar code reader position (PP4/PP5/PPBF/PPBR) error (Accessor origin or FWD detected, or cell full). Suspect the P origin sensor, FWD sensor, or P motor.	CHK 00BA	
00BC	During initialization, the Accessor origin could not be detected. Suspect the P origin sensor, FWD sensor, or P motor.	CHK 00BC	
00BD	During Accessor movement, the movement stop condition detected. Suspect the P encoder sensor or P motor.	CHK 00BD	
00BF	No gap condition detected at the completion of Accessor operation. Suspect the centering sensor, P origin sensor, FWD sensor, or P motor.	CHK 00BF	
00C0	Accessor operation disabled because a cartridge magazine was removed. Suspect the magazine set sensor.	CHK 00C0	1. Confirm the magazine is closed. 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.

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Code (H)	Description	Panel Indication	Action Required
00C8	Centering calibration error #1. During centering calibration, centering sensor OFF condition could not be detected. Suspect the centering sensor or P motor.	CHK 00C8	Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
00C9	Centering calibration error #2. During centering calibration, centering sensor ON condition could not be detected. Suspect the centering sensor, X motor, or P motor.	CHK 00C9	
00D0	Checksum error detected during firmware update.	CHK 00D0	1. Confirm the firmware file version. 2. Reinstall the firmware file. 3. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
00D1	Firmware ID error detected during firmware update.	CHK 00D1	
00D2	Boot information error detected during firmware update.	CHK 00D2	
00D3	Bar code reader is not in maintenance mode during bar code reader firmware update (operation interrupted). Suspect the bar code reader cable connection.	CHK 00D3	1. Initiate an inventory. See"Conducting a Library Inventory" on page 4-5 (Operator Control Panel) or "Conducting a Library Inventory" on page 4-18 (Web User Interface). 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
00D9	Magazine failed to unlock. Suspect the magazine or magazine sensor.	CHK 00D9	1. Cycle the power supply and try again. 2. Manually unlock the magazine, remove the magazine from the library, and inspect it for damage. • If not damaged, return it to the library and run Library Verify before resuming normal library operations. • If damaged, replace the magazine.
00DA	Mail Slot failed to unlock. Suspect the magazine or magazine sensor.	CHK 00DA	

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Code (H)	Description	Panel Indication	Action Required
00DD	An error detected during bar code reader firmware check. Suspect the bar code reader cable connection.	CHK 00DD	1. Initiate an inventory. See"Conducting a Library Inventory" on page 4-5 (Operator Control Panel) or "Conducting a Library Inventory" on page 4-18 (Web User Interface). 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.

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Code (H)	Description	Panel Indication	Action Required
00E0	Write operation not finished within 1 ms when writing data to flash memory.	CHK 00E0	Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
00E1	Clear operation not finished within 10 seconds when clearing a sector in flash memory.	CHK 00E1	
00E2	Error detected in tape library configuration stored in flash memory.	CHK 00E2	
00E3	Checksum error detected in flash memory.	CHK 00E3	
00F0	Sensor error #1. Accessor encoder sensor B error detected during blink check. Suspect the Accessor encoder sensor B.	CHK 00F0	
00F1	Sensor error #2. Accessor encoder sensor A error detected during blink check. Suspect the Accessor encoder sensor A.	CHK 00F1	
00F2	Sensor error #3. X encoder sensor error detected during blink check. Suspect the X encoder sensor.	CHK 00F2	
00F3	Sensor error #4. Magazine sensor error detected during blink check. Suspect the magazine sensor.	CHK 00F3	
00F8	Sensor error #5. X origin sensor error detected during blink check. Suspect the X origin sensor.	CHK 00F8	
00F9	Sensor error #6. Cartridge sensor error detected during blink check. Suspect the cartridge sensor.	CHK 00F9	
00FA	Sensor error #7. Accessor forward sensor error detected during blink check. Suspect the Accessor forward sensor.	CHK 00FA	
00FB	Sensor error #8. Accessor origin sensor error detected during blink check. Suspect the Accessor origin sensor.	CHK 00FB	

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Drive Error Codes

Code (H)	Description	Panel indication	Action Required
0200	Invalid data sent to drive. NAK detected.	CHK 0200	1. Reseat all cables. See "Reseating Cables" on page 6-9. 2. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.
0201	Timeout error occurred while waiting for response from drive.	CHK 0201	
0203	Drive disconnected.	CHK 0203	
0205	Drive busy.	CHK 0205	
0206	Command could not be executed because drive is not mounted.	CHK 0206	
020E	Drive error detected.	CHK 020E	
020F	Unsupported drive detected.	CHK 020F	
0222	Media could not be ejected because drive is in Prevent Medium Removal state.	CHK 0222	1. Release the drive Prevent Medium Removal state from the host. 2. Reseat all cables. See "Reseating Cables" on page 6-9. 3. Cycle the power supply and try again. • If the problem is corrected, run Library Verify before resuming normal library operations. • If the problem persists, contact Overland Technical Support.

Web User Interface Error Messages

Title	Message	Issuing Panel
Error	Users full.	User Access
	You cannot remove yourself.	User Access

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Title	Message	Issuing Panel
Parameter Error	Login failure.	Login
	Unsupported update file.	Firmware Update
	Invalid parameter found in [***].	Configure Library
	Please input parameter of [***].	Configure Library
	Password parameter error.	User Access
	User name parameter error.	User Access
	Not enough role.	User Access
	A user name unmatched.	User Access
	A user is already existed.	User Access
	Users full.	User Access
	Flush ROM write error detected.	User Access
	User information access failure.	User Access
Command Error	Move command execution failure. (Code: "****")	Move Cartridges
	Unload command execution failure:[****].	Unload Drive
	Drive not ready.	Unload Drive,
		Download Drive Logs,
		Firmware Update
	Medium not present.	Unload Drive
	Online command execution failure:[****].	Library State
	Offline command execution failure:[****].	Library State
	Reset command execution failure:[****].	Reset Library/Drive
	Inventory command execution failure:[****].	Inventory
	"Normal Dump" command execution failure:[****].	Download Drive Logs
	"Force Dump" command execution failure:[****].	Download Drive Logs
	Restore failure. Library serial number is unmatched.	Save/Restore
	Writing to cookie was failure. The configuration data was not saved to cookie.	All

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Title	Message	Issuing Panel
Cleaning Command Error	Illegal medium.	Clean Drive
	Source element empty.	Clean Drive
	Destination element full.	Clean Drive
	Drive failure.	Clean Drive
	Prevent medium removal.	Clean Drive
	During import/export element access.	Clean Drive
	Gap detected.	Clean Drive
	Not loaded.	Clean Drive
	Expired medium.	Clean Drive
	Write protect error.	Clean Drive
	Cleaning execution failure: [****].	Clean Drive
I/O Error	File open failure.	Download Drive Logs, Download Library Logs, Save/Restore, Firmware Update
	Unsupported file.	Save/Restore, Firmware Update
Network Error	*** command transmission failure.	Manage Library
	*** information access failure.	All
	Library logs download failure. Please retry download.	Download Library Logs
	Email submit failure.	Notifications
	SNMP trap submit failure.	Notifications
	Log data access failure.	Traces, View Library Logs
	Port open failure [**.**.**.**:****]. Do you wish to retry?	Applet 3 times retry
	Port open failure [**.**.**.**:****]. Please check the library and the network condition setting. Applet shutdown.	Displayed after 3 unsuccessful attempts using the Java Applet.
	Web interface version is not matched between Library and Java Applet. Please shut a browser and restart the Applet. There is a possibility of malfunctioning if you proceed operation from Web. Please clear the cache of Java when this message appears even if it restart.	All
Library Busy	Library information updating now. Can not access library information	All

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Trap Definitions (Types)

The NEO 100s supports the following types of SNMP traps.

Trap ID	Event Type	Description	Clean Drive LED	Attention LED	Error LED
1	Emergency	Drive error	–	–	ON
2		Library error	–	–	ON
21	Error	Drive error	–	–	ON
22		Library error	–	–	ON
51 (Drive) 52 (Library)	Warning	• Drive error • Library error • Endurance frequency attainment	–	–	ON
53 (Drive)		Cleaning demand reception from drive	ON	–	–
54 (Library)		Cleaning cartridge demand for an exchange	–	ON	–
101 (Drive) 102 (Library)	Information	• Beginning of inventory • Change in library operation mode • Beginning of medium move • Completion of medium move • Library/Drive not ready • Library/Drive to online • Magazine unlock operation • Mail Slot unlock operation	–	–	–

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Appendix C

TapeAlert Flags

This appendix is intended to provide additional information to the reader about the tape library and tape drive. All error code and diagnostic information contained in this chapter cannot be accessed from the Operator Control Panel of the Library. The Operator Control Panel will, however, display other library error codes and drive error codes when problems occur. For a listing of Operator Control Panel error messages, see Appendix B, "Error Codes."

TapeAlert is a standard that defines status conditions and problems experienced by devices such as tape drives, autoloaders, and libraries. The standard enables a server to read TapeAlert messages (called flags) from a tape drive. The server reads the flags from Log Sense Page 0x2E.

This library is compatible with TapeAlert technology, which provides error and diagnostic information about the drives and the library to the server. Because library and drive firmware may change periodically, the SNMP interface in the library does not require code changes if devices add additional TapeAlerts that are not supported today. However, should this occur the Management Information Block (MIB) is written to minimize impact to the SNMP monitoring station. At the time of this writing, the TapeAlert flags in this appendix correctly represent TapeAlerts that will be sent. The MIB file should not be taken to mean that all traps that are defined in the MIB will be sent by the library or that they will be sent in the future.

Topics in TapeAlert Flags:

- Library Supported TapeAlert Flags
- Tape Drive Supported TapeAlert Flags

Library Supported TapeAlert Flags

Flag Number	Flag Name	Type*	Description	Action Required
01	Library Hardware A	C	The library mechanism is having trouble communicating with the tape drive.	1. Cycle the power supply and try again. 2. If the problem persists, contact Overland Technical Support.
02	Library Hardware B	W	The media changer mechanism has a hardware fault.	
03	Library Hardware C	C	The media changer mechanism has a hardware fault that requires a reset to recover.	1. Make sure the media changer and drives are not being used by any host, then reset the library from the front panel. 2. If the problem persists, contact Overland Technical Support.

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Flag Number	Flag Name	Type*	Description	Action Required
04	Library Hardware D	C	The library mechanism has a hardware fault that is not mechanism related, or requires power cycle to recover.	1. Cycle the power supply and try again. 2. If the problem persists, contact Overland Technical Support.
06	Library Interface	C	The library has identified an interface fault.	1. Check all cables and cable connections. 2. Restart the operation. 3. If the problem persists, contact Overland Technical Support.
08	Library Maintenance	W	Library preventative maintenance required.	Preventative maintenance of the library is required. Consult the library user's manual for device-specific preventative maintenance tasks.
12	Library Stray Tape	C	A cartridge has been left in the drive inside the library by a previous hardware fault.	1. Try unloading the cartridge from the drive using the Operator Control Panel or Web User Interface. • If the cartridge unloads, move the cartridge from the drive to the Mail Slot. Remove the cartridge and inspect for damage. If not damaged, return the cartridge to the library. Run Library Verify before resuming normal library operations. • If the cartridge did not unload from the drive, cycle the power supply and try again. 2. If the problem persists, contact Overland Technical Support.
13	Library Pick Retry	W	There is a potential problem with the cartridge loader picking a cartridge from a drive or slot.	No action is required. This flag is cleared when the next move command is received.
14	Library Place Retry	W	There is a potential problem with the cartridge loader placing a cartridge into a slot.	
15	Drive Load Retry	W	There is a potential problem with the cartridge loader or drive when placing a cartridge into a drive.	
16	Library Door	W	The operation has failed because the library door is open.	Clear any obstructions from the library door. Close the library door. This flag is cleared when the door is closed.
17	Library Mail Slot	C	Mechanical problem with the Mail Slot.	There is a mechanical problem with the library Mail Slot.
18	Library Magazine	C	Library magazine not present.	The library cannot operate without the magazine. 1. Insert the magazine into the library. 2. Restart the operation.
19	Library Security	W	Library security has been compromised.	The door was opened then closed during an operation.

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Flag Number	Flag Name	Type*	Description	Action Required
21	Library Offline	I	Library manually turned offline.	The library has been manually turned offline and is unavailable for use.
22	Library Drive Offline	I	Library turned internal drive offline.	The drive inside the library has been taken offline. This is for information purposes only. No action is required.
23	Library Scan Retry	W	There is a potential problem with the bar code label of the scanner hardware in the library mechanism.	No action is required.
24	Library Inventory	C	The library has detected an inconsistency in its inventory	• Redo the library inventory to correct inconsistency. • Restart the operation.
27	Cooling Fan Failure	W	One or more fans inside the library have failed.	This flag is cleared when all fans are working again.
28	Power Supply	W	PSU failure inside the library subsystem.	The power supply has failed inside the library. Contact Overland Technical Support.

* **C** = Critical: Needs immediate action. **W** = Warning: Action to be taken. **I** = Information: Information for user.

Tape Drive Supported TapeAlert Flags

Flag Number	Flag Name	Description	Action Required
3	Hard error	Set for any unrecoverable read, write, or positioning error (this flag is set in conjunction with flags 4, 5, or 6).	See the action required for Flag Number 4, 5, or 6 in this table.
4	Media	Set for any unrecoverable read, write, or positioning error that is due to a faulty tape cartridge.	Replace the tape cartridge.
5	Read failure	Set for any unrecoverable read error where the isolation is uncertain and failure could be due to a faulty tape cartridge or drive hardware.	If Flag Number 4 is also set, the tape cartridge is defective. Replace the tape cartridge.
6	Write failure	Set for any unrecoverable write or positioning error where isolation is uncertain and failure could be due to a faulty tape cartridge.	If Flag Number 9 is also set, make sure that the write-protect switch is set so that data can be written to the tape. See “Write-Protect Switch” on page 5-7. If Flag Number 4 is also set, the tape cartridge is defective. Replace the tape cartridge.
7	Media life	Set when the tape cartridge reaches its end of life (EOL).	1. Copy the data to another tap cartridge. 2. Discard the old (EOL) tape.
8	Not data grade	Set when the tape cartridge is not data-grade. Any data that you back up to the tape is at risk.	Replace the tape cartridge with a data-grade tape cartridge.
9	Write protect	Set when the tape drive detects that the tape cartridge is write-protected.	Ensure that the cartridge's write-protect switch is set so that data can be written to the tape. See “Write-Protect Switch” on page 5-7.

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Flag Number	Flag Name	Description	Action Required
10	No removal	Set when the tape drive receives an UNLOAD command after the server prevented the tape cartridge from being removed.	Refer to the documentation for your server's operating system.
11	Cleaning media	Set when a cleaning tape is loaded into the drive.	No action required. Status only.
12	Unsupported format	Set when a non-supported cartridge type is loaded into the drive or when the cartridge format has been corrupted.	Replace the invalid cartridge with a supported tape cartridge.
14	Unrecoverable snapped tape	Set when the operation failed because the tape in the drive snapped.	Do not attempt to extract the tape cartridge. Contact Overland Technical Support.
15	Cartridge memory chip failure	Set when a cartridge memory (CM) failure is detected on the loaded tape cartridge.	Replace the tape cartridge.
16	Forced eject	Set when a tape cartridge was unloaded manually while the drive was reading or writing.	No action required. Status only.
17	Media loaded is Read-only format	Set when a cartridge marked as read-only is loaded into the drive. The flag is cleared when the cartridge is ejected.	No action required. Status only.
18	Tape directory corrupted in cartridge memory	Set when the tape drive detects that the tape directory in the cartridge memory has been corrupted.	Re-read all data from the tape to rebuild the tape directory.
19	Nearing media life	Set when the tape cartridge is nearing its specified end of life. It is cleared when the cartridge is removed from the drive.	1. Copy the data to another tape cartridge. 2. Replace the tape cartridge.
20	Clean now	Set when the tape drive detects that it needs cleaning.	Clean the tape drive.
21	Clean periodic	Set when the tape drive detects that it needs routine cleaning.	Clean the tape drive as soon as possible. The drive can continue to operate, but requires cleaning soon.
22	Expired cleaning media	Set when the tape drive detects a cleaning cartridge that has expired.	Replace the cleaning cartridge.
23	Invalid cleaning cartridge	Set when the drive expects a cleaning cartridge to be loaded and the loaded cartridge is not a cleaning cartridge.	Use a valid cleaning cartridge.
30	Hardware A	Set when a hardware failure occurs that requires that you reset the tape drive to recover.	Contact Overland Technical Support.
31	Hardware B	Set when the tape drive fails its internal Power-On Self-Tests (POSTs).	Note the error code on the single-character display and contact Overland Technical Support.
32	Interface	Set when the tape drive detects a problem with the host interface.	Contact Overland Technical Support.

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Flag Number	Flag Name	Description	Action Required
33	Eject media	Set when a failure occurs that requires the tape cartridge to be unloaded from the drive.	Unload the tape cartridge, then reinsert and restart the operation. If this fails, use different media.
34	Download fail	Set when an FMR image is unsuccessfully downloaded to the tape drive via the SAS interface.	Check the FMR image is correct. If necessary, download the correct FMR image.
36	Drive temperature	Set when the drive temperature sensor indicates that the drive's temperature exceeds the recommended temperature of the library.	Contact Overland Technical Support.
37	Drive voltage	Set when the drive detects power supply voltages that approach or exceed the specified voltage limits.	Contact Overland Technical Support.
38	Predictive failure of drive hardware	Set when a hardware failure of the tape drive is predicted.	Contact Overland Technical Support.
39	Diagnostics required	Set when the tape drive detects a failure that requires diagnostics for isolation.	Contact Overland Technical Support.
51	Tape directory invalid at unload	Set when the tape directory on the tape cartridge that was previously unloaded is corrupted. The file-search performance is degraded.	Use your backup software to rebuild the tape directory by reading all the data.
52	Tape system area write failure	Set when the tape cartridge that was previously unloaded could not write its system area successfully.	Copy the data to another tape cartridge, then discard the old tape cartridge.
53	Tape system area read failure	Set when the tape system area could not be read successfully at load time.	Copy the data to another tape cartridge, then discard the old tape cartridge.
55	Load failure	Set when a hardware malfunction prevents the tape cartridge from being loaded into the drive, or when a tape cartridge is stuck in the drive.	If the tape cartridge will not load in the drive: 1. Remove the tape cartridge from the library and inspect it for damage. If damaged, discard it. 2. Insert another tape cartridge into the tape drive. 3. If the problem persists, contact Overland Technical Support. If the tape cartridge is stuck in the drive: 1. Attempt to unload the tape from the drive using the host backup application that is currently using the drive, or via the remote or local UI. 2. If the cartridge will still not unload, contact Overland Technical Support.

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Flag Number	Flag Name	Description	Action Required
56	Unload failure	Set when a drive hardware error prevents the tape cartridge from being unloaded from the tape drive, or when the tape cartridge is stuck in the drive.	1. Unload the cartridge from the drive using the Operator Control Panel or the Web User Interface. 2. Try a power cycle of the entire library. This causes the drive to reset and attempt to rewind and unload when power is restored. If the cartridge unloads, remove it from the library and inspect it. If damaged, discard it. 3. Try to unload the cartridge from the drive again using the Operator Control Panel or the Web User Interface. 4. If the cartridge will still not unload from the drive, contact Overland Technical Support.
59	WORM Media integrity check failed	Set when the drive determines that the data on the tape is suspect from a WORM point of view.	1. Copy the data to another WORM tape cartridge. 2. Discard the old WORM tape.
60	WORM Media overwrite attempted	Set when the drive rejects a write operation because the rules for allowing WORM writes have not been met. Data can only be appended to WORM media. Overwrites to WORM media are not allowed.	Append the information on a WORM tape cartridge or write the data to a non-WORM cartridge.

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Master Glossary & Acronym List

NOTE: This is a general Overland Storage glossary and acronym list. Not all items may be found in this document or be used by this product.

1000BASE-T

1000BASE-T (also known as IEEE 802.3ab) is a standard for gigabit Ethernet over copper wiring. It requires, at a minimum, Category 5 cable (the same as 100BASE-TX), but Category 5e (Category 5 enhanced) and Category 6 cable may also be used and are often recommended. 1000BASE-T requires all four pairs to be present and is far less tolerant of poorly installed wiring than 100BASE-TX.

Address

An address is a data structure or logical convention used to identify a unique entity, such as a particular process or network device.

ADI

Short for *Automation Drive Interface*. Media changer (automation) devices use a private communication link for monitoring and controlling removable medium devices (drives). The standard specifies a protocol for transporting commands, data, and status between automation devices and the drives.

Algorithm

A sequence of steps designed to solve a problem or execute a process.

ATA

Short for *Advanced Technology Attachment*. A standard interface for connecting storage devices to a PC.

Auto Balance

A feature that automatically balances preferred paths evenly among all available host ports and controller ports. Auto balancing spreads I/O load by utilizing as many host ports and controller ports as possible.

Authentication

The validation of a user's identity by requiring the user to provide a registered login name and corresponding password.

Autonegotiation

An Ethernet feature that automatically negotiates the fastest Ethernet speed and duplex setting between a port and a hub or switch. This is the default setting and is recommended.

Autosensing

An Ethernet feature that automatically senses the current Ethernet speed setting.

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Back-end

Front-end and back-end are terms used to characterize program interfaces and services relative to the initial user, human or program, of these interfaces and services. A “front-end” application is one that application users interact with directly. A “back-end” application or program serves indirectly in support of the front-end services, usually by being closer to the required resource or having the capability to communicate with the required resource. The back-end application may interact directly with the front-end or, perhaps more typically, is a program called from an intermediate program that mediates front-end and back-end activities.

Bar Code

The machine-readable representation of a product code. Bar codes are read by a scanner that passes over the code and registers the product code. The width of black lines and white spaces between varies. Combinations of lines and spaces represent characters. Overland uses 3-of-9 code (Code 39) where each character is represented by 9 bars, 3 of which are wide.

Bridging

Devices that connect and pass packets between two network segments that use different communications protocol.

Bus or Channel

A common physical path composed of wires or other media, across which signals are sent from one part of a computer to another. A channel is a means of transferring data between modules and adapters, or between an adapter and SCSI devices. A channel topology network consists of a single cable trunk that connects one workstation to the next in a daisy-chain configuration. All nodes share the same medium, and only one node can broadcast messages at a time.

CA

Short for *Certificate Authority*. A trusted third-party in a network that issues and manages security credentials.

Cat 5 Cable

Short for *Category 5*, it is network cabling that consists of four twisted pairs of copper wire terminated by 8P8C modular connectors. CAT 5 cabling supports frequencies up to 100 MHz and speeds up to 100 Mbps. It can be used for ATM, token ring, 100BASE-T, and 10BASE-T networking.

Cat 5 is based on the EIA/TIA 568 Commercial Building Telecommunications Wiring Standard developed by the Electronics Industries Association as requested by the Computer Communications Industry Association in 1985.

Cat 6 Cable

Short for *Category 6*, it is network cabling that consists of four twisted pairs of copper wire terminated by 8P8C modular connectors made to higher standards that help reduce noise caused by crosstalk and system noise. The ANSI/TIA-568-B.2-1 specification states the cable may be made with 22 to 24 AWG gauge wire, so long as the cable meets the specified testing standards.

It is designed for Gigabit Ethernet that is backward compatible with the Category 5/5e and Category 3 cable standards. Cat 6 features more stringent specifications for crosstalk and system noise. The cable standard provides performance of up to 250 MHz and is suitable for 10BASE-T / 100BASE-TX and 1000BASE-T (Gigabit Ethernet).

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Channel

A communications path between two computers or devices.

Checksum

The result of adding a group of data items that are used for checking the group. The data items can be either numerals or other character strings treated as numerals during the checksum calculation. The checksum value verifies that communication between two devices is successful.

CIFS

Short for *Common Internet Filesystem*. Also know as SMB. The default Windows protocol for communication between computers. A specification for an Internet file access protocol that complements HTTP and FTP and reduces access time.

daemon

A process that runs in the background.

default gateway

The router used when there is otherwise no known route to a given subnet.

DHCP

Short for *Dynamic Host Configuration Protocol*. A communications protocol that lets network administrators centrally manage and automate the assignment of IP addresses on a computer network. Each system that connects to the Internet/intranet needs a unique IP address.

Disaster Recovery

A strategy that allows a company to return to normal activities after a catastrophic interruption. Through failover to a parallel system or by restoration of the failed system, disaster recovery restores the system to its normal operating mode.

Disk Roaming

This is the process of removing a disk drive from a controller and putting it back later, either on the same controller, or a different one, and having it recognized as the same disk drive. The disks may be can be attached to different ports than they were originally attached to, without harm to the data. The disks may be attached to the same ports or different ports on the controller.

DNS

Short for *Domain Name Service*. A network service that translates domain names into IP addresses using a server that maintains a mapping of all host names and IP addresses. Normally, this mapping is maintained by the system administrator, but some servers support dynamic mappings.

Domain

A set of network resources in Windows 2000/2003/2008, such as users and groups of users. A domain may also include multiple servers on the network. To gain access to these network resources, the user logs into the domain.

Domain Name

The ASCII name that identifies the domain for a group of computers within a network.

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Ethernet

The most widely installed LAN technology. 100BASE-T Ethernet provides transmission speeds of up to 100 Mbps. Fast Ethernet or 1000BASE-T provides transmission speeds up to 1000 Mbps and is typically used for LAN backbone systems, supporting workstations with 100BASE-T cards. Gigabit Ethernet (GbE) provides an even higher level of backbone support at 1000 Mbps (one Gigabit or one billion bits per second).

Ethernet Address

The unique six-digit hexadecimal (0-9, A-F) number that identifies the Ethernet interface.

Ethernet Port

The port on a network card to provide Ethernet access to the computer.

Event

Any significant occurrence or error in the system that may require notifying a system administrator or adding an entry to a log.

Expansion Slot

Area in a computer that accepts additional input/output boards to increase the capability of the computer.

F_port

A *Fabric* port within a Fibre Channel switch that provides a point-to-point link attachment to a single N_Port. F_Ports are intermediate ports in virtual point-to-point links between end ports, for example N_Port to F_Port to F_Port to N_Port using a single Fibre Channel fabric switch.

Failback

Failback occurs when a path with a higher priority than the currently active path is restored. In this case, I/O will "fail back" to the higher priority path once it is available again.

Failover

A strategy that enables one Ethernet port to assume the role of another port if the first port fails. When the port comes back online, the original identities are restored. Failover is possible only in a multi-Ethernet configuration.

Failover/Failback

A combination of Failover and Failback. When a preferred path becomes unavailable, another path is used to route I/O until the preferred path is restored. In this case I/O will "fail back" to the preferred path once it is available again.

FC-AL

Short for *Fibre Channel Arbitrated Loop*. An FC-AL is a Fibre Channel network in which up to 126 systems and devices are connected in a loop topology, with each transmitter connecting to the receiver of the device on its logical right. The Fibre Channel Arbitrated Loop protocol used for transmission is different from Fibre Channel switched and point-to-point protocols. Multiple FC-AL loops can be connected via a fabric switch to extend the network.

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Fibre Channel

Fibre Channel (FC) is a gigabit-speed network technology which transports SCSI commands over Fibre Channel networks. Fibre Channel was primarily concerned with simplifying the connections and increasing distances, but later designers added the goals of connecting SCSI disk storage, providing higher speeds and far greater numbers of connected devices.

Firmware

Software stored in read-only memory (ROM) or programmable ROM (PROM). Firmware is often responsible for the behavior of a system when it is first switched on.

FL_port

A *Fabric Loop* port within a Fibre Channel switch that is capable of Fibre Channel Arbitrated Loop operations and is connected to one or more NL_Ports via a Fibre Channel Arbitrated Loop. An FL_Port becomes a shared entry point for public NL_Port devices to a Fibre Channel fabric. FL_Ports are intermediate ports in virtual point-to-point links between end ports that do not reside on the same loop, for example NL_Port to FL_Port to F_Port to N_Port through a single Fibre Channel fabric switch.

Front-end

See Back-end.

FTP

Short for *File Transfer Protocol*. A standard Internet protocol that provides a way to exchange files between computers on the Internet.

Full-duplex

A type of transmission that allows communicating systems to both transmit and receive data simultaneously.

Gateway

The hardware or software that bridges the gap between two network subnets. It allows data to be transferred among computers that are on different subnets.

Gigabit Ethernet

Also known as GigE or GbE, this Ethernet standard uses a one Gigahertz (1000 Hz) clock rate to move data.

HBA

Short for *Host Bus Adapter*. An HBA is an I/O adapter that sits between the host computer's bus and the Fibre Channel loop and manages the transfer of information between the two channels. In order to minimize the impact on host processor performance, the HBA performs many low-level interface functions automatically or with minimal processor involvement.

Half-duplex

A type of transmission that transfers data in one way at a time.

Hidden Share

A share that restricts the display of the share via the Windows (SMB), Web View (HTTP/HTTPS), FTP, and AFP protocols. See also SMB.

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Host Bus Adapter

Connects a host system (such as a NEO) to other network and storage devices.

Host Name

The unique name by which a computer is known on a network. It is used to identify the computer in electronic information interchange.

Hot Swapping

The ability to remove and add disk drives to a system without the need to power down or interrupt client access to filesystems. Not all components are hot-swappable. Please read installation and maintenance instructions carefully.

HTTP

Short for *Hypertext Transfer Protocol*. An application protocol for transferring files (text, graphic images, sound, video, and other multimedia files) over TCP/IP on the World Wide Web.

HTTPS

Short for *Hypertext Transfer Protocol Secure*. The HTTP protocol using a Secure Sockets Layer (SSL). SSL provides data encryption, server authentication, message integrity, and client authentication for any TCP/IP connection.

IDE

Short for *Integrated Drive Electronics*. A standard interface for connecting storage devices to a PC.

I/E Element

See Mail Slot.

I/O Station

See Mail Slot.

Inheritance

In Windows permissions, inheritance is the concept that when permissions for a folder are defined, any subfolders within the defined folder inherit its permissions. This means an administrator need not assign permissions for subfolders as long as identical permissions are desired. Inheritance greatly reduces administrative overhead and also results in greater consistency in access permission management.

Initiator Device

A system component that originates an I/O command over an I/O bus or network. An initiator issues the commands; a *target* receives them.

An initiator normally runs on a host computer. It may be either a software driver or a hardware plug-in card, often called a Host Bus Adapter (HBA). A software initiator uses one of the computer's Ethernet ports for its physical connection, whereas the HBA will have its own dedicated port.

Software initiators are readily available for most host operating systems. Hardware initiators are not widely used, although they may be useful in very high performance applications or if 10 Gigabit Ethernet support is required.

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Internet

A global network of networks used to exchange information using the TCP/IP protocol. It allows for electronic mail and the accessing ad retrieval of information from remote sources.

I/O (Input/Output)

The operation of transferring data to or from a device, typically through an interface protocol like CIFS, NFS, or HTTP.

IP

Short for *Internet Protocol*. The unique 32-bit value that identifies the location of the server. This address consists of a network address, optional subnetwork address, and host address. It displays as four addresses ranging from 1 to 255 separated by periods.

IQN

Short for *iSCSI Qualified Name*. A name format used in the iSCSI protocol.Initiators and targets have IP addresses, just like any other network entity. They are also identified using an iSCSI name, called the iSCSI Qualified Name (IQN). The IQN should be unique worldwide. It is made up of a number of components, specifying the date, identifying the vendor in reverse format, and then uniquely identifying the initiator or target. An example of an IQN is:

```
iqn.2001-04.com.example:storage:diskarray-sn-123456789
```

Since these IQNs are rather unwieldy, initiators and targets also use short, user friendly names (sometimes called alias names or just aliases).

iSCSI

Short for *Internet SCSI*. iSCSI is an IP-based storage networking standard for linking data storage facilities. iSCSI is a standard that defines the encapsulation of SCSI packets in TCP and then routing it using IP. It allows block-level storage data to be transported over widely used IP networks.

iSNS Server

Short for *Internet Storage Name Service* Server. A protocol enabling the automatic discovery, configuration, and management of iSCSI devices on a TCP/IP network.

Kerberos

A secure method for authenticating a request for a service used by ADS. Kerberos lets a user request an encrypted “ticket” from an authentication process that can then be used to request a service from a server. The user credentials are always encrypted before they are transmitted over the network.

In Windows 2000/XP, the domain controller is the Kerberos server. The Kerberos key distribution center (KDC) and the origin of group policies are applied to the domain.

LAN

Short for *Local Area Network*. A network connecting computers in a relatively small area such as a building.

LCD

Short for *Liquid Crystal Display*. An electronic device that uses liquid crystal to display messages.

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LED

Short for *Light-Emitting Diode*. An LED is a type of diode that emits light when current passes through it. Visible LEDs are used as indicator lights on electronic devices.

Linux

A Unix-like operating system that was designed to provide personal computer users a free or very low-cost operating system comparable to traditional and usually more expensive Unix systems.

Load Balancing

A process available only in multi-Ethernet configurations. The Ethernet port transmission load is distributed among two or more network ports (assuming the cards are configured for load balancing). An intelligent software adaptive agent repeatedly analyzes the traffic flow from the server and distributes the packets based on destination addresses.

Local Group/Local User

A group/user defined locally on a SnapServer using the **Web User Interface**. The local user is defined by the server administrator. Windows domain, ADS, and NIS users are not considered local.

LTO

Short for *Linear Tape-Open*, a technology that was developed jointly by HP, IBM, and Certance (Seagate) as an open standards. It is ideally suited for backup, restore, and archive applications, and provides reliability in both stand-alone and automated environments. The tape cartridges go by the label "Ultrium."

- Ultrium generation 3 (LTO-3) cartridge – up to 800 GB capacity (2:1 compression) and an uncompressed transfer rate of 80 MB/s.
- Ultrium generation 4 (LTO-4) cartridge – up to 1.6 TB capacity (2:1 compression) and an uncompressed transfer rate of 120 MB/s.
- Ultrium generation 5 (LTO-5) cartridge – up to 3.0 TB capacity (2:1 compression) and an uncompressed transfer rate of 140 MB/s.

LUN

Short for *Logical Unit Number*. A SCSI or Fibre Channel device identifier. LUN is a subdivision of a SCSI target.

LVD

Short for *Low Voltage Differential*. LVD is a method of powering SCSI cables that will be formalized in the SCSI-3 specifications. LVD uses less power than the current differential drive (HVD), is less expensive, and allows for higher speeds such as those of Ultra-2 SCSI. LVD requires 3.3 volts (versus 5 volts for HVD).

MAC Address

Short for *Media Access Control address*, a hardware address that uniquely identifies each node of a network. In the Open Systems Interconnection (OSI) model, one of two sublayers of the Data Link Control layer concerned with sharing the physical connection to the network among several computers. Each Ethernet port has a unique MAC address.

Mail Slot

A configurable import/export slot or magazine to provide a means of exchanging tape media while the unit is still operating.

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Mapping table

A table indexed by sequential LUN values, indicating the selected BUS:TARGET:LUN devices. Mapping tables are used by routers and bridges like the GEOi to perform Ethernet-to-SCSI pathing.

MD5 Algorithm

MD5 is a way to verify data integrity, and is much more reliable than checksum and many other commonly used methods.

MIB

Short for *Management Information Base*. A formal description of a set of network objects that can be managed using the Simple Network Management Protocol (SNMP). The format of the MIB is defined as part of SNMP.

Mirroring

Used in RAID 1 and 10, a process of storing data on one disk and copying it to one or more disks, creating a redundant storage solution. RAID 1 is the most secure method of storing mission-critical data.

Mounted

A filesystem that is available.

MPIO

Short for *Multipath Input/Output*. A multipath solution built into Microsoft server-grade operating systems. It requires the DSM to work with RAID storage array hardware.

MTU

Short for *Maximum Transfer Unit*. It is the largest size packet or frame, specified in octets (eight-bit bytes), that can be sent in a packet- or frame-based network.

N_port

A *Node* port connects via a point-to-point link to either a single N_Port or a single F_Port. N_Ports handle creation, detection, and flow of message units to and from the connected systems. N_Ports are end ports in virtual point-to-point links through a fabric, for example N_Port to F_Port to F_Port to N_Port using a single Fibre Channel fabric switch.

NAT

Short for *Network Address Translation*. A technique for passing network traffic through a router whereby one set of IP addresses is used on one side of the router and another set of addresses is used on the other side. This is done to avoid address conflicts and to increase the address space of the internal network.

NDMP

Short for *Network Data Management Protocol*. A protocol standard used by some Network Attached Storage systems to provide an industry standard means to do backup and restores of the NAS system without the need for 3rd party agents to be installed on the NAS device. Also see NDMP.org for further details.

NIC

Short for *Network Interface Card*. A board that provides network communication capabilities to and from a computer.

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NIS

Short for *Network Information Service*. A network naming and administration system for smaller networks that was developed by Sun Microsystems. NIS+ is a later version that provides additional security and other facilities.

NL_port

A *Node Loop* port is capable of arbitrated loop functions and protocols. An NL_Port connects via an arbitrated loop to other NL_Port and at most a single FL_Port. NL_Ports handle creation, detection, and flow of message units to and from the connected systems. NL_Ports are end ports in virtual point-to-point links through a fabric, for example NL_Port to F_Port to F_Port to N_Port using a single Fibre Channel fabric switch. In the absence of a fabric switch FL_Port, NL_Ports can communicate with other NL_Ports in virtual point-to-point links through a FC-AL open loop circuit often through FC-AL (Arbitrated Loop) hub or loop switch devices.

Node

Any device, including servers, workstations, or tape devices, that are connected to a network; also the point where devices are connected.

Node Name

This is an eight-byte, 16-character hexadecimal number, uniquely identifying a single fibre device. It incorporates the World Wide Name and two additional bytes that are used to specify the format. In a host system with multiple FC ports, all adapters typically use the same Node Name, but unique Port Names.

NTFS

Short for *New Technology File System*. The standard file system used by Windows NT and later versions of the Windows operating system.

NTP

Short for *Network Time Protocol*. A protocol for synchronizing the system clocks of computers over a packet-switched network.

NVRAM

Abbreviation of *Non-Volatile Random Access Memory*, a type of memory that retains its contents when power is turned off.

OCP

Short for *Operator Control Panel*. The OCP touch screen is a 2.5" x 1.25" (6.4cm x 3.2cm) pressure-sensitive blue and light-gray screen that provides an easy way to directly communicate with the unit. It provides text and graphic messages and, through the use of virtual buttons and sliders, allows users to make changes to current settings.

Permissions

A security category, such as no access, read-only, or read-write, that determines what operations a user or group can perform on folders or files.

PoP

Short for *Proof of Purchase*. The number used to obtain a license key for an upgrade to third-party applications.

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Port Name

This is an eight-byte hexadecimal number, uniquely identifying a single host HBA port. It incorporates the World Wide Name and two additional bytes that are used to specify the format and indicate the port number.

Portal

A target's IP address together with its TCP port number.

POSIX

Short for *Portable Operating System Interface*. A set of standard operating system interfaces based on the Unix operating system. The need for standardization arose because enterprises using computers wanted to develop programs that could run on multiple platforms without the need to recode.

Preferred Path

The preferred path is the default path. When the path selection policy is set to Failover/Failback, the preferred path is always used if it is available. If the preferred path fails, I/O switches to another path. If it is later restored, I/O switches back to the preferred path.

Protocol

A standardized set of rules that specifies the format, timing, sequencing, and/or error checking for data transmissions.

PTP

Short for *Point-to-Point*. PTP is the common mode of attachment to a single host. PTP is sometimes used to attach to a Fibre Channel switch for SAN connectivity.

Public Access Share

A share that allows all users read/write access to the filesystem.

Quota

A limit on the amount of storage space on a volume that a specific user or NIS group can consume.

Restrict Anonymous

A Windows feature in which anonymous users cannot list domain user names and enumerate share names. Microsoft has provided a mechanism in the Registry called restrict anonymous for administrators to restrict the ability for anonymous logon users (also known as NULL session connections) to list account names and enumerate share names.

RETMA

Short for *Radio-Electronics-Television Manufacturers' Association*. It is the common name given for a 19-inch distribution frame rack for mounting components.

RMU

Short for *Remote Management Utility*. It is an interface built into the unit that provides remote access to and configuration of the library through an Ethernet port. It hosts a dedicated, protected website that can be accessed by a web browser using the IP address assigned. See Web User Interface.

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Round Robin

The Round Robin path selection policy causes all healthy paths to be used for I/O. Paths are used in a round-robin order.

Router

A router is a device that enables connectivity between Ethernet network segments.

SAN

Short for *Storage Area Network*. Data storage connected to a network that provides network clients access to data using block level protocols. To the clients, the data storage devices appear local rather than remote. An iSCSI SAN is sometimes referred to as an IP-SAN.

SAS

Short for *Serial Attached SCSI*. It is a point-to-point serial protocol that replaces parallel SCSI bus technology (multidrop) and uses the standard SCSI command set. It has no termination issues, supports up to 16,384 devices (using expanders), and eliminates clock skew. It consists of an Initiator that originates device service requests, a Target containing logical units that receives device service requests, and a Service Delivery Subsystem that transmits information between the Initiator and the Target.

SCSI

Short for *Small Computer System Interface*. SCSI is an industry standard for connecting peripheral devices and their controllers to an initiator. Storage devices are daisy-chained together and connected to a host adapter. The host adapter provides a shared bus that attached peripherals use to pass data to and from the host system. Examples of devices attached to the adapter include disk drives, CD-ROM discs, optical disks, and tape drives. In theory, any SCSI device can be plugged into any SCSI controller.

SCSI addressing

Each device supported by a SCSI adapter has its own unique SCSI address, which dictates the device's priority when arbitrating for access to the SCSI bus. A SCSI address of 7 has the highest priority. For a fast/wide SCSI adapter that supports up to 16 devices, the next highest priority address is 6, then 5, 4, 3, 2, 1, 0, 15, 14, 13, 12, 11, 10, 9, and 8. The narrow SCSI adapter supports up to eight devices, including itself. The SCSI address 7 has the highest priority, followed by 6, 5, 4, 3, 2, 1, and 0.

SCSI bus

A SCSI bus provides a means of transferring data between SCSI devices. A SCSI bus is either an 8- or 16-bit bus that supports up to 8 or 16 devices, including itself. The bus can consist of any mix of initiators and targets, with the requirement that at least one initiator and one target must be present.

SCSI device

A SCSI device is a single unit on a SCSI bus that originates or services SCSI commands. A SCSI device is identified by a unique SCSI address. SCSI devices can act as initiators or targets.

SCSI port

A SCSI port is an opening at the back of a router that provides connection between the SCSI adapter and SCSI bus.

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Serial Number

The ten-character alphanumeric number assigned by the manufacturer at the factory.

Session

When an initiator wants to establish a connection with a target, it establishes what is known as an iSCSI session. A session consists of one or more TCP/IP connections between an initiator and a target. Sessions are normally established (or re-established) automatically when the host computer starts up, although they also can be established (and broken) manually.

SMB

Short for *Server Message Block*. A protocol for Windows clients. SMB uses the TCP/IP protocol. It is viewed as a complement to the existing Internet application protocols such as FTP and HTTP. With SMB, you can access local server files, obtain read-write privileges to local server files, share files with other clients, and restore connections automatically if the network fails.

SMS

Short for *Short Message Service*. Is a means of sending short text messages to a mobile phone.

SMTP

Short for *Simple Mail Transfer Protocol*. A TCP/IP protocol used for sending and receiving email.

SNMP

Short for *Simple Network Management Protocol*. A system to monitor and manage network devices such as computers, routers, bridges, and hubs. SNMP views a network as a collection of cooperating, communicating devices, consisting of managers and agents.

SSH

Short for *Secure Shell*. A service that provides a remote console for special system administration and customer support access to the server. SSH is similar to telnet but more secure, providing strong encryption so that no passwords cross the network in clear text.

SSL

Short for *Secure Sockets Layer*. A protocol for managing the security of a message sent on the Internet. It is a type of technology that provides data encryption, server authentication, message integrity, and client authentication for any TCP/IP connection.

Standalone

A network bonding mode which treats each port as a separate interface. This configuration should be used only in multihomed environments in which network storage resources must reside on two separate subnets.

Static IP Address

An IP address defined by the system administrator rather than by an automated system, such as DHCP.

Storage Area Network

See SAN.

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Subnet Mask

A portion of a network that shares a common address component. On TCP/IP networks, subnets are all devices with IP addresses that have the same prefix.

Tape Cartridge

A magnetically coated strip of plastic in a plastic housing on which data can be encoded. Storing data on tapes is considerably cheaper than storing data on disks. Tapes also have large storage capacities, ranging from a few hundred kilobytes to several gigabytes. They are generally used for long-term storage and backup, or for transporting large amounts of data. Tapes come in a variety of sizes and formats.

Tape Drive

A device, that reads data from and writes it onto a tape.

Target

A target is a device (peripheral) that responds to an operation requested by an initiator (host system). Although peripherals are generally targets, a peripheral may be required to act temporarily as an initiator for some commands (for example, SCSI COPY command).

Targets are embedded in iSCSI storage controllers. They are the software that makes the RAID storage available to host computers, making it appear just like any other sort of disk drive.

TCP/IP

Short for *Transmission Control Protocol/Internet Protocol*. The basic protocol used for data transmission over the Internet.

Telco

Short for *Telephone Company*. When used in reference to a rack, it refers to the two-posted, light-weight rack for center-mounted appliances.

Telnet

A terminal emulation program for TCP/IP networks such as the Internet. The Telnet program runs on a computer and connects it to a server on the network. You enter commands through the Telnet program and they will be executed as if you were entering them directly on the server console. This enables you to control the server and communicate with other servers on the network. To start a Telnet session, you must log in to a server by entering a valid user name and password. Telnet is a common way to remotely control Web servers.

Terminator

A terminator refers to the electrical connection at each end of a SCSI bus. The terminator is composed of a set of resisters, or possibly other components. The function of a terminator is to provide a pull-up for open collector drivers on the bus, and also impedance matching to prevent signal reflections at the ends of the cable. SCSI buses require that a terminator be placed on the SCSI connector on the last SCSI peripheral. Data errors may occur in a SCSI bus that is not terminated.

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TOE (TCP Offload Engine)

Short for *TCP Offload Engine*. TOE is a technology used in network interface cards to offload processing of the entire TCP/IP stack to the network controller. It is primarily used with high-speed network interfaces, such as gigabit Ethernet and 10 gigabit Ethernet, where processing overhead of the network stack becomes significant.

Topology

Logical layout of the parts of a computer system or network and their interconnections. There are two types of topology: physical and logical. The physical topology of a network refers to the configuration of cables, computers, and other peripherals. Logical topology is the method used to pass the information between workstations.

Trap

A signal from a device informing an SNMP management program that an event has occurred.

U

A standard unit of measure for designating the height in computer enclosures and rack cabinets. One U equals 1.75 inches. For example, a 3U server chassis is 5.25 inches high.

UDP

Short for *User Datagram Protocol*. A communications protocol for sending messages between computers in a network that uses the Internet Protocol (IP). UDP is an alternative to the Transmission Control Protocol but, unlike TCP, does not guarantee reliability or ordering of data packets.

UNC

Short for *Universal Naming Convention*. In a network, a way to identify a shared file in a computer without having to specify (or know) the storage device it is on. In the Windows OS, the UNC name format is as follows:

```
\\server_name\share_name\path\file_name
```

UPS

Short for *Uninterruptible Power Supply*. A device that allows a computer to keep running for a short time when the primary power source is lost. It also provides protection from power surges. A UPS device contains a battery that starts when the device senses a loss of power from the primary source.

URL

Short for *Uniform Resource Locator*. A Web address.

USB Port

USB is short for *Universal Serial Bus*. A USB port is a hardware interface for low-speed peripherals such as the keyboard, mouse, joystick, scanner, printer, and telephony devices.

VLAN

Short for *Virtual LAN*. It consists of a network of computers that behave as if they are connected to the same wire – even though they may actually be physically connected to different segments of a LAN.

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Web User Interface

A Web-based utility used for configuration and ongoing maintenance, such as monitoring server conditions, configuring email alerts for key events, or for SNMP management.

Windows Domain Authentication

Windows-based networks use a domain controller to store user credentials. The domain controller can validate all authentication requests on behalf of other systems in the domain. The domain controller can also generate encrypted challenges to test the validity of user credentials. Other systems use encrypted challenges to respond to CIFS/SMB clients that request access to a share.

WINS

Short for *Windows Internet Naming Service*. The server that locates network resources in a TCP/IP-based Windows network by automatically configuring and maintaining the name and IP address mapping tables.

Workgroup

A collection of computers that are grouped for sharing resources such as data and peripherals over a LAN. Each workgroup is identified by a unique name.

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